GOOGLE LUNAR XPRIZE: A NEW ERA IN SPACE

HWM MALAYSIA

SEPTEMBER 2015 // VOL 13 ISSUE 10
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Ultra-wide perspective

PICTURE AUDI AG

Official Magazine for
PLAZA LOW YAT

PP 18407/03/2014(033808) ISSN 1675-4883
09
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BT5580

Wireless Bluetooth Speaker

Music-to-Go

The Philips BT5580 wireless speaker is made with the intention to prove that not all Bluetooth speakers are created equal. With aptX and AAC technology up its sleeves, you can bet your bottom dollar that the BT5580 is able to belt out all your music tracks in crystal clear clarity.

One-Touch NFC Pairing

Pairing an NFC-enabled device to the BT5580 couldn't be any simpler. All you need to do is place it onto the NFC area, and you're all set to get your music going. Thanks to aptX and AAC Bluetooth technology, wireless music will be streamed in the highest possible audio fidelity.

Built-in Microphone

The BT5580 is a Bluetooth speaker that is made for both work and play. Place the BT5580 in the center of a conference room and you'll be able to take advantage of its built-in microphone to engage in conference calls.

Audio-in Connectivity

Prefer playing your music the old-school, wired way? Philips has got you covered, as the BT5580 also comes outfitted with a 3.5mm audio-in port that's compatible with almost all electronic devices.

8-Hour Battery Life

The two Lithium-ion batteries of the BT5580 are able to provide up to eight hours of non-stop music streaming – making it the ideal music companion for your outdoor excursions. It even comes complete with an integrated handle for effortless portability.

M120E

In.Sight Wireless HD Home Monitor

Comprehensive Surveillance

There's no point going on a vacation only to end up being anxious about the safety of your home – which is where the M120E comes in. No matter night or day, you can rest assured that the M120E is always on-hand to keep a watchful eye out for the sneakiest of intruders.

The All-Seeing Eye

Under no circumstances will anyone be able to slip past the sights of the M120E, as it comes equipped with an extra-wide angle lens that provides an extensive viewing angle of 102 degrees.

Night Vision Mode

The M120E is equipped with a set of infrared lights that allows it to capture clear images and videos during the darkest of nights. There's no need for you to manually switch between the day and night modes, as the camera is able to do so automatically thanks to its ambient light sensor.

Motion and Sound Notifications

You won't be needing to constantly monitor the M120E's livestream to catch a burglar red-handed, as you will automatically be notified of the slightest sound and movement that the M120E picks up.

Push-to-Talk

Want to send a message to your loved ones back home? You can do so using the M120E handy push-to-talk feature, which enables you to communicate with your family – or notify intruders of your presence – through the camera's accompanying In.Sight+ app.

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Photo Credit: Tomek Tuz & Viktor Hanacek

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ED'S NOTE

SEPTEMBER 2015

SMALL STEP, GIANT LEAP

Ever look up in the night sky and wonder how did Earth and our solar system have come to be the way they are today? Decades before NASA's Curiosity rover made its successful landing on Mars, bright minds from the United States and the Soviet Union were competing to outdo each other in launching satellites, probes, and manned flight missions during the Cold War. This ultimately culminated in the successful completion of the Apollo 11 mission to land on the Moon. Today, a new kind of competitive landscape has emerged, one that fosters a more collaborative Space Race. We're referring to Google's Lunar XPRIZE, more of which you can read on page 51 ("Conquering Space Through Private Enterprise").

Many science fiction films were released around the time of the Space Race. While most were outrageous and fantastical in nature, the genre helped spur incredible advances in visual effects, as well as serving as a powerful vehicle for socio-political commentary. More importantly, the enthusiasm for sci-fi mainstays like Star Trek (and its many spin-offs) further fueled interest in the possibility of space travel beyond the Moon. And it is this curiosity of the unknown that led NASA's New Horizons spacecraft to make its first reconnaissance of the dwarf planet Pluto and the Kuiper Belt after three billion miles. We looked back at some of the salient points of the nine-year mission on page 147 ("New Horizons: Reaching Pluto").

In this issue of HWM Malaysia, we also look at some of the examples of what a connected and sustainable smart home can do, as well as newer and greener means of energy to address the growing energy use of data centers. After all, we only have one Earth.

Michael Low

EDITOR

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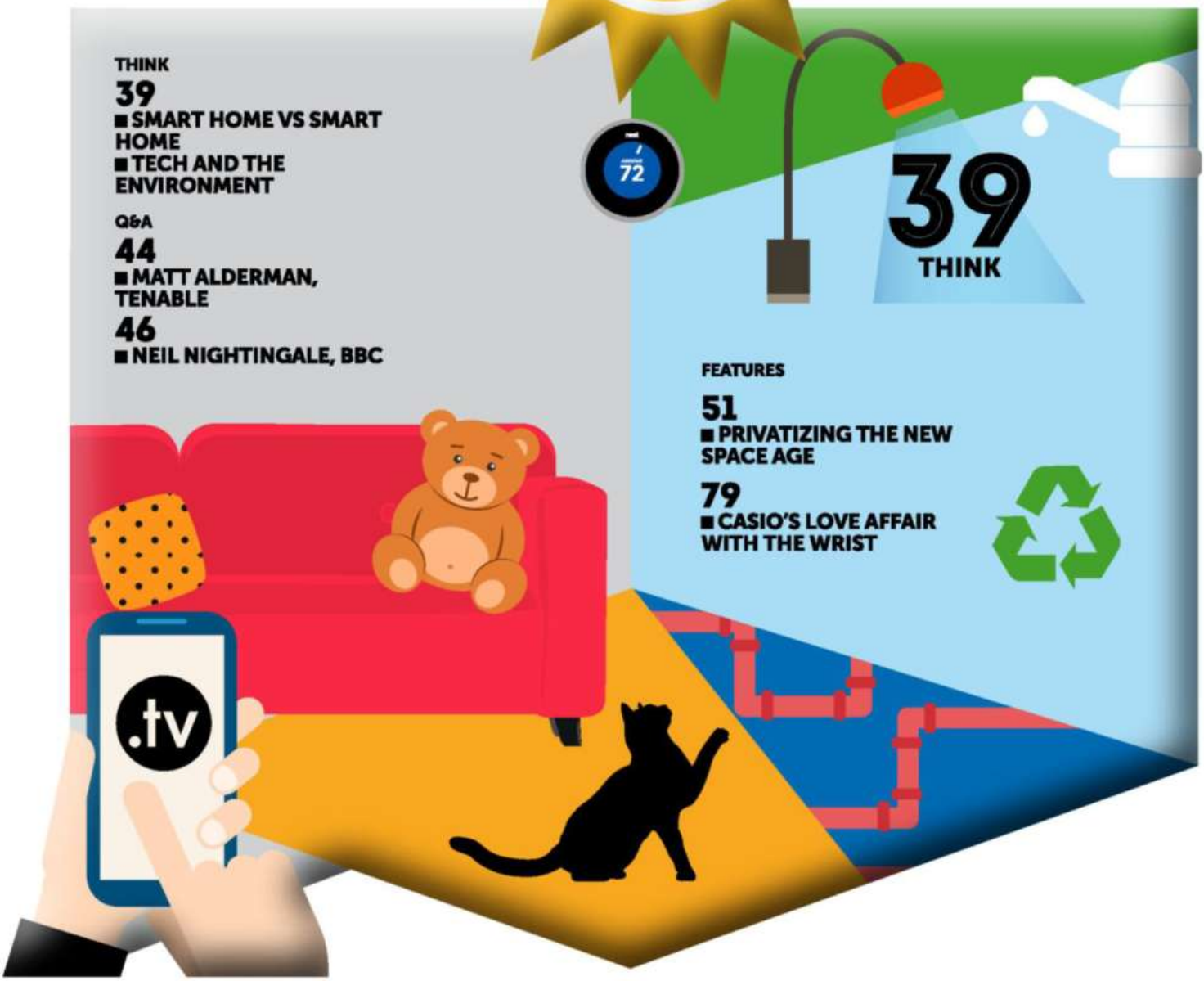

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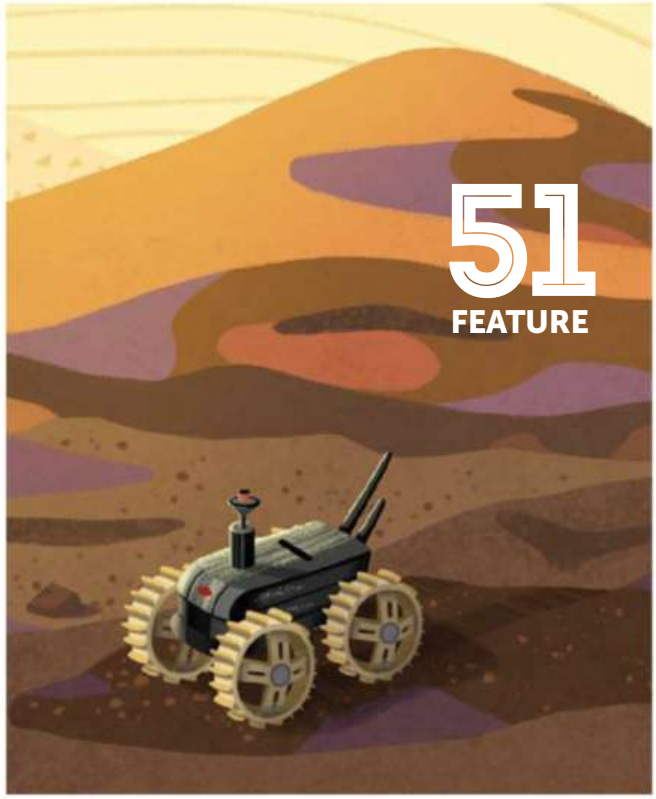

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MALAYSIA HWM

GROUP MANAGING EDITOR
ASTER LIM asterlim@bluinc.com.my

EDITORIAL
Editor
MICHAEL LOW mike@bluinc.com.my
Contributing Editors
ZACHARY CHAN
ALVIN SOON
NG CHONG SENG
JAMES LU
Senior Tech Writers
BRYAN CHAN bryan@bluinc.com.my
JOHN LAW johnlawec@bluinc.com.my
KENNY YEO
MARCUS WONG
Tech Writers
AZIZUL RAHMAN ISMAIL azizul@bluinc.com.my
AMMAR UZAIR AMINUDDIN ammaruzair@bluinc.com.my
IAN CHEE cheechungyean@bluinc.com.my
PETER CHU peterchu@bluinc.com.my
WONG CHUNG WEE
SALEHUDDIN HUSIN
KOH WANZI
LIU HONGZUO

CREATIVE
Creative Director
FREDERICK LIM fred@bluinc.com.my
Junior Art Director
LAWRANCE GAN lawrance@bluinc.com.my
Associate Art Director
KEN KOH
Senior Designer
CHANG MING HIN minghin@bluinc.com.my
Graphic Designer
IAN CHONG
Junior Graphic Designer
ASMUNI ABDUL RAHMAN asmuni@bluinc.com.my

ADVERTISING SALES
Director
HENG CHIP HIAN heng@bluinc.com.my
SIMON LING simon@bluinc.com.my
Senior Advertising Sales Executive
JASON WONG jason@bluinc.com.my
Advertising Sales Executive
TEO FEN LEIGH fenleigh@bluinc.com.my

MARKETING
Marketing & Advertising Operations
MONIQUE TAN tanernyee@bluinc.com.my

ADMINISTRATION
Administration Manager
LAVINYA SHALINI lshalini@bluinc.com.my

PUBLISHING SERVICES
Senior Circulation & Subscription Manager
FRANCINE LOUIS francine@bluinc.com.my
Circulation & Subscription Manager
KENNETH SEW kennethsew@bluinc.com.my
Circulation & Subscription Executive
MOHD FADZLI SALEH fadzli@bluinc.com.my
Production Manager
SATVINDER skaur@bluinc.com.my
Assistant Production Manager
KONG AH KUAN ahkuan@bluinc.com.my
Assistant Traffic Manager
LEE PHAIK LING phaikling@bluinc.com.my

BluInc

CHIEF EXECUTIVE OFFICER
DATIN AZLIZA AHMAD TAJUDDIN azliza@bluinc.com.my

SENIOR CONSULTANT
LOO KIT CHOONG kitchoong@bluinc.com.my

GENERAL MANAGER, BUSINESS DEVELOPMENT AND NEW MEDIA
MOHD FAIZAL ABUDUL HADI faizal@bluinc.com.my

HEAD OF CORPORATE COMMUNICATIONS
MARGARET SEBASTIAN msebastian@bluinc.com.my

SENIOR HUMAN RESOURCES MANAGER
HABIBAH MUHAMMAD bib@bluinc.com.my

SENIOR FINANCE MANAGER
SHIREEN GOH shireengoh@bluinc.com.my

RESEARCH MANAGER
AUDREY CHAN audreychan@bluinc.com.my

INTERNATIONAL OFFICES

Singapore Office
Zachary Chan (Editor)
82 Genting Lane, Media Centre
Level 7, Singapore 349567
Tel: (65) 6319-6319,
Fax: (65) 6319-6227.
Email: sales@hardwaremag.com

Indonesia Rep. Office
Martin Wijaya (Chief Editor)
PO Box 6169 JKUPL 14440
Jakarta, Indonesia
Tel: (62) 21 612 0233/0955
Fax: (62) 21 6220 2580
Email: info.id@hwzcorp.com

Philippines Rep. Office
Marvin R. Velasco (Editor)
Unit B-2, Topy Main Building, No. 3
Economia Street, Bagumbayan,
Quezon City 1110, Philippines
Tel: (63) 2634 9179
Fax: (63) 2634 9180
Email: sales.ph@hwzcorp.com

Taiwan Rep. Office
Dennis Chou (Asia Media Contact)
2F-2, No.35, Sec 2,
Fushing South Road,
Taipei 106, Taiwan
Tel: 886-2-8773-4199
Fax: 886-2-8773-4200
Email: sales.tw@hwzcorp.com

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Tel: (603) 7952 7000 Fax: (603) 7960 0148 Email: enquiries@bluinc.com.my

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NEW THIS MONTH

Every month, we receive dozens of product announcements and mentions, sit through many a launch event and try out all kinds of devices. All these products are then carefully curated by our crack team of tech gurus. The final list is presented here in Gear and it is our hope you'll find something to geek-out to.

SAMSUNG GALAXY NOTE 5

Samsung's definitely not left anything to chance with its latest flagship smartphone, the Galaxy Note 5. The 7.6mm-thin device is packed to the brim with top-of-the-line hardware, which include a 5.7-inch Quad HD (2,560 x 1,440) Super AMOLED display, a speedy Exynos 7420 chipset that's home to a 64-bit octa-core processor, a Mali-T760MP8 GPU, 4GB of LPDDR4 RAM, and a 3,000mAh battery. Completing the Galaxy Note 5's impressive feature set is its 16MP f/1.9 rear camera that's equipped with optical image stabilization, and its 5MP front-facing camera. The Galaxy Note 5 is available in 32GB or 64GB capacities, and will run on Android 5.1 Lollipop.

Samsung Careline 1 800 88 7799

MORE INSIDE>

PHILIPS ACTIONFIT SHQ2305
Tangle-free workout.

SONY A7R II
World's first back-illuminated, full-frame camera.

XIAOMI MI TV 2S
A compelling smart TV.

HP PAVILION X2 (2015)
Four versatile modes.

PHILIPS ACTIONFIT SHQ2305

Looking for a pair of earphones that are worthy enough to complement your vigorous exercise routines? The Philips ActionFit SHQ2305 in-ear earphones might just fit the bill. Whether you're running or working out at the gym, you can be certain that the IPX4-rated SHQ2305 will never break your stride, as it comes with a 'stability ring' that helps it stay snug within your ears. You need not be worried about its cable snagging onto random objects either, as it has been reinforced with the unparalleled durability of Kevlar.

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WD MY PASSPORT ULTRA (2015)

WD's tried-and-tested My Passport Ultra portable hard drive has just received a refresh for 2015. Apart from its sleek new design, the USB 3.0-compatible My Passport Ultra is also now made available with storage capacities of up to 3TB. You won't have to worry about the contents of your My Passport Ultra being exposed to snooping eyes, as they are kept secured with a 256-bit AES hardware encryption.

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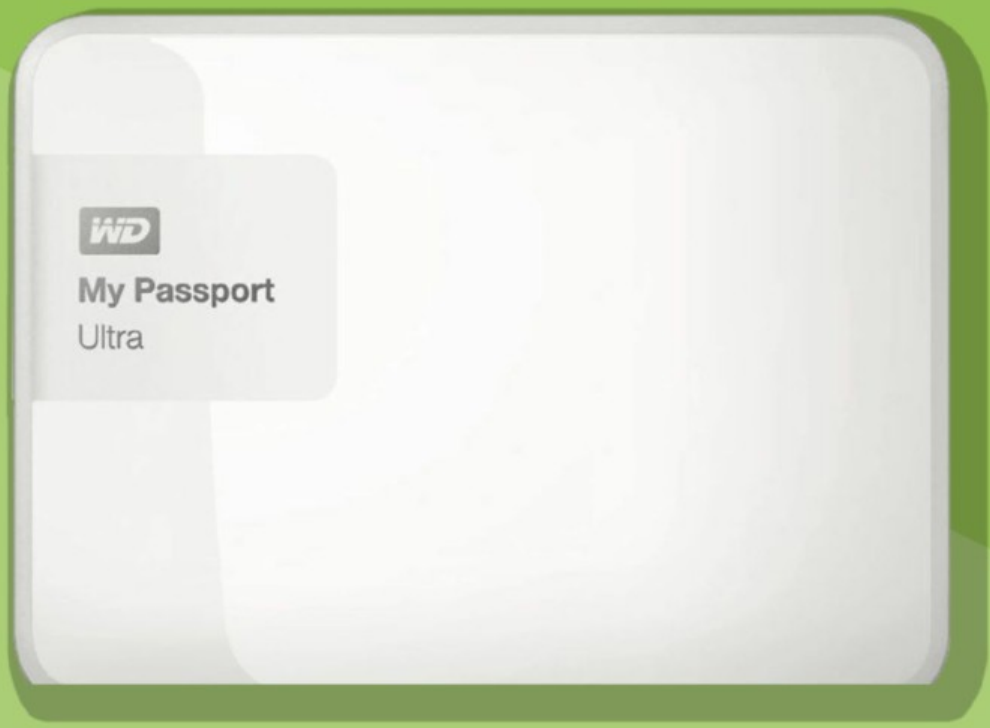

SONY A7R II

Ever since Sony launched the A7 series of mirrorless cameras, the lure of full-frame DSLRs has undoubtedly decreased. Now, there's a new A7 on the block and it's called the A7R II. This full-frame mirrorless camera comes in a compact body, and is equipped with all the bells and whistles one would expect from a professional full-frame DSLR, and then some. These include a 42.4MP BSI sensor, 5-axis in-body stabilization, and a native ISO of 100 to 25,600.

Sony Customer Interaction Center
1 300 88 1233

CANON POWERSHOT G3 X

If you're looking for a high-end compact camera, you'll likely be intrigued by the Canon PowerShot G3 X. This latest addition to the PowerShot lineup features a 20.2MP, 1-inch CMOS sensor and a lens system that has 24-600mm reach! In addition, there's also a myriad of features to help you get that perfect photo, every time. They include Zoom Framing Assist and Dynamic Image Stabilization. Of course, there's also Wi-Fi and NFC integration, for even more flexible shooting.

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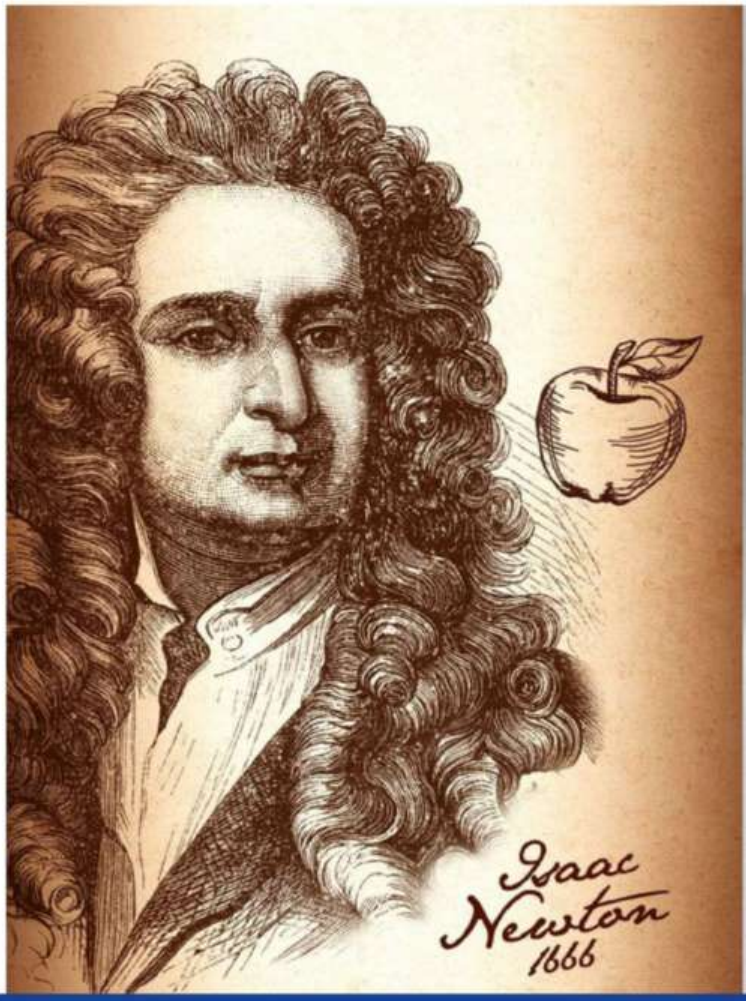

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GOPRO HERO+ LCD

With the HERO+ LCD, GoPro has answered the call of fans who want an easier way to frame and review shots into the standard GoPro design. In fact, they've even added video trimming capabilities to the HERO+ LCD, so you can now make basic cuts to your videos directly in-camera and share them without needing a computer.

gopro.com

GIGABYTE GA-Z170X-GAMING G1

Complement the new Intel 'Skylake' processor with Gigabyte's brand new GA-Z170X-Gaming G1 motherboard. It's designed to support the new DDR4 memory and the latest USB Type-C connector. The motherboard is also designed to support dual PCI-e Gen3 M.2 SATA SSDs, and up to four graphics cards in either NVIDIA's SLI or AMD's CrossFire X configurations. For audio, there's the Creative-certified Sound Blaster ZxRi audio card built directly into the board.

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HP PAVILION X2 (2015)

The HP Pavilion x2 has been refreshed to include a host of new features fit for 2015. It is powered by a quad-core Intel Atom Z3736F processor with 2GB of RAM and up to 64GB of eMMC storage. In addition, it is poised to take advantage of next-generation peripherals with a USB Type-C connector. As a 2-in-1 hybrid device, it also has a detachable 10-inch 1,920 x 1,080 pixel resolution IPS touchscreen display.
hp.com/my

XIAOMI MI TV 2S

Priced at around RM1,929, the Mi TV 2S is a super-slim 48-inch 4K UHD TV powered by an MStar 6A928 quad-core 1.4GHz processor, runs MIUI TV OS (based on Android 5.0), and comes with 2GB RAM, 8GB storage, plus support for 802.11ac Wi-Fi and Bluetooth 4.0. There's even an elegant power plug co-designed with Volex. Too bad it's only available in China.

mi.com

HTC ONE E9+ DUAL SIM

Bringing the best of HTC's flagship series into a more affordable package is the One E9+ dual sim. Its 5.5-inch 2K WQHD display, HTC BoomSound, and dual front-facing speakers come together beautifully for an unforgettable entertainment experience. Love to take photos? The One E9+ dual sim is fitted with a 20MP rear camera, and a wide-angle UltraPixel front-facing camera for the obligatory selfies. On top of all that, the phone supports dual 4G nano SIM cards.

HTC Customer Service Hotline 1 800 889 855

GP POWERBANK MOBILE CHARGER (10,000MAH)

The trouble with having powerful smartphones is that they tend to run out of battery when you need them the most. And when that happens, instead of frantically searching high and low for a power socket, you'll probably be better off relying on a power bank like the GP PowerBank Mobile Charger instead. Whether it's a tablet or a smartphone, the 10,000mAh GP PowerBank Mobile Charger will be able to quickly recharge them with juice to spare. It is also packed with safety features such as short circuit, loopback, and overcharging protections.

GP Battery Marketing (M) Sdn Bhd (03) 5569 3499

LG MOSQUITO AWAY

Take your home's air-conditioning to the next level and fight off the dreaded dengue fever with LG's Mosquito Away air-conditioners. It's built with a special repellent that uses an ultrasonic wave that repels the Aedes mosquitoes without the use of harmful chemicals.

LG Customer Service Center 1 800 82 2822

SONY CYBER-SHOT RX100 IV

There's no stopping Sony's momentum in the digital imaging industry. The company has also launched a powerful compact camera called the Cyber-shot RX100 IV. In its fourth incarnation, the RX100 IV has a 1-inch stacked Exmor RS CMOS sensor that makes it insanely fast. Thanks to this, it can capture super slow-motion video at up to 960 fps. It also shoots stills at a maximum shutter speed of 1/32,000 of a second.

Sony Customer Interaction Center 1 300 88 1233

P1 FORHOME® UNLIMITED BROADBAND

If you are renting a place, or you just don't want the hassle of dealing with installation and building management, but at the same time, you want the total freedom of the Internet – there is only one solution. The Internet was never meant to be tied down or restricted, so free yourself with **P1 ForHome® Unlimited Broadband.**

Zero Upfront Payment

Virtually unlimited wireless broadband sounds too good to be true? Don't worry, with the ReadytoP1ay promotion, you will enjoy 1-month free Internet and no upfront payment. Just subscribe to any of the available ForHome® plan, and you are all set. You pay nothing to get conneced and enjoy 1st month subscription for FREE!

This means that you could go to any P1 sales point, and walk away ready to enjoy the Internet. Otherwise, you can also subscribe online with free delivery service to your doorstep with ZERO hassle!

Unlimited Internet Usage Quota

Wires are not holding you back, small data quotas are a thing of the past, the only question remains is how fast are you willing to go. P1 offers two for home packages:

- Enjoy up to 1Mbps speeds with the **ForHome® 109**, a perfect choice for a household with up to 4 devices.
- Need more? Get the **ForHome® 159** package that could easily handle up to eight devices with 2Mbps speeds.

Free Wi-Fi Modem with Monthly Savings

In a home environment connecting all your devices to a small wireless dongle or router won't do. You need something more substantial and dependable. That's why every subscription to the P1 ForHome® package includes a DX230 desktop modem.

The DX230 is VoIP ready. It support WiFi b/g/n standards, has two LAN ports and two voice ports. And of course, with the two LAN ports, you could expand the capabilities of your network with additional routers. On top of that, enjoy monthly RM10.60 modem rebate off from your subscribed plan!

RM 0 upfront fee first month subscription

Ready to dive in? Visit **ReadyToP1ay.com.my** to get started!

JABRA SPORT COACH

If you're serious about your workouts and getting in shape, but need that extra push in the form of personal training, then the Jabra Sport Coach is the pair of earphones for you. Use it together with the Jabra Sport Life app and you have your music and your personal coaching going straight to your ears, without another person standing right next to you. An IP55 rating also means it will survive a drowning in your sweat.

Mobile Dot Com Network Sdn Bhd (03) 6257 0925

ASUS ZENPOWER 9,600MAH

High-capacity power banks need not always be imposingly big and bulky in size. Take the ASUS ZenPower as an example: it has a battery capacity of 9,600mAh and yet it's merely the size of a credit card. The ZenPower comes rife with safety features as part of ASUS' PowerSafe Technology, which actively monitors the ZenPower's temperature, input and output voltages, and circuitry to prevent any unfortunate mishaps. The ZenPower power bank is available in colors of pink, gold, blue, silver, and black.

store.asus.com/my

SAMSUNG GALAXY J7

Not everyone is willing to sacrifice an arm and a leg for a feature-packed smartphone. But with the Samsung Galaxy J7, you wouldn't need to, because it comes with a 5.5-inch HD (1,920 x 1,080) Super AMOLED display, a 1.5GHz octa-core Cortex-A53 processor, 1.5GB of RAM, 16GB of internal storage (expandable to 128GB via microSD), and a healthy 3,000mAh battery at a reasonable price. The Galaxy J7 also features a 13MP (f/1.9) rear camera, and an 8MP front-facing camera that comes complete with its own LED flash module.

Samsung Careline 1 800 88 9999

LOGITECH X50

Despite its deceptively small size, Logitech's quirky-looking X50 wireless Bluetooth speaker is actually capable of belting out loud, clear sound. It's able to do so for quite a while as well, as its rechargeable battery has enough juice for the X50 to churn out five hours worth of music before needing a recharge. The hockey puck-sized speaker also comes equipped with an auxiliary port for you to play your songs the traditional wired way. The X50 is available in five distinct colors: green, gray, yellow, orange, and blue.

Logitech Malaysia 1 800 88 0719

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Earn U Card Points When You Top Up or Pay Bills

Imagine a loyalty card that rewards you for using your phone. That's exactly what the **U Card** does by earning you points, either when you top up at least RM30 (for prepaid), or pay your bills in full and on time (for postpaid).

Every ringgit spent will then earn you one point, and if you've been a **U Mobile** subscriber for over a year, each ringgit will get you 1.5 points. What if you've been with **U Mobile** for over three years? Then, each ringgit spent will get you double – 2 points!

So what can you do with the points you've collected? Well, you can use them to redeem prepaid credit or pay your postpaid bills.

Even better, your points can be used to redeem a wide range of vouchers, from Lazada and Zalora cash vouchers, to Berjaya Times Square hotel gift certificates, and theme park entrance vouchers.

In addition, you can benefit from on-the-spot redemption promotions at more than 70 lifestyle merchants with over 2,800 retail outlets nationwide.

Benefits of being a **U Card** member aren't just limited to points. You also gain access to exclusive weekly promos and discounts, birthday bonus, markdown promos, quarterly treats, as well as invites to exclusive closed-door events.

Membership is free for life as well!

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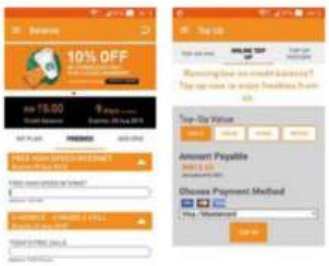
The **MyUMobile** app lets you manage your **U Mobile** account from the handy convenience of your smartphone.

You can view your accumulated **U Card** points, check out the latest exclusive offers and privileges, and even redeem air time or cash vouchers.



Other features include tracking your voice, SMS, and data usage and balances, downloading your monthly statements, paying your postpaid bills, or topping up your prepaid account with ease.

Don't delay, download the app today!

Find out more about **U Card** at u.com.my/ucard

XIAOMI REDMI NOTE 2

Xiaomi is setting a new benchmark for the phrase 'more bang for buck' once again with the Redmi Note 2, and we boldly say so because it shares the same MediaTek Helio X10 chipset as HTC's flagship One M9+. Other noteworthy features of the Redmi Note 2 include its 5.5-inch Full HD (1,920 x 1,080) display, 2GB of RAM, 16GB of internal storage, and generous 3,020mAh battery. That's not all, as the Redmi Note 2 also sports a 13MP f/2.2 rear camera, and a 5MP front-facing camera. The Redmi Note 2 runs on Xiaomi's latest MIUI 7 OS, which is based on Android 5.1 Lollipop.

Xiaomi Malaysia 1 800 281 182

OPPO HA-2

For that extra boost in audio quality, you'll want to get your hands on the Oppo HA-2 portable headphone amplifier and DAC. Equipped with an ESS Sabre32 Reference ES9018-K2M DAC chip, which supports PCM audio up to 384kHz at 32-bit and DSD audio up to 12MHz, you'll be able to easily enjoy High-Resolution Audio. What's more, it doubles as a power bank, thanks to a built-in 3,000mAh battery.

Oppo Digital Malaysia (03) 7958 5399

SONY XPERIA Z3+ DUAL

The Xperia Z3+ Dual is Sony's latest flagship phone, with everything the Xperia phones are known for: IP68 dust and waterproofing, beautiful yet simplistic design with its metal frame and glass panels, and good cameras. The front camera is now greater than ever before too, sporting an Exmor R sensor. And if the name hasn't made it obvious yet, you get space for two SIM cards as well.

Sony Mobile Communications Int'l AB (Malaysia) 1 800 88 7666

SAMSUNG GALAXY S6 EDGE+

Fitted with the same dual-curved display that was first featured on the original Galaxy S6 edge, the new Galaxy S6 edge+ now comes with a 5.7-inch Quad HD Super AMOLED display, Samsung's own Exynos 7420 octa-core SoC, 4GB of RAM, 32GB of built-in storage, and a 16MP rear camera.

Ssmsung Careline 1 800 88 7799

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COOLEST COOLER

The Coolest is a cooler that keeps your drinks cold, and more; it has separate storage for dining ware and other kitchen tools. It's also pretty smart, with a built-in battery that powers an onboard blender. The battery can also be used to recharge portable devices via USB, plus it even has an integrated, removable and waterproof wireless speaker for setting the party mood.
coolest.com

NOKIA OZO

Professional filmmakers can look forward to Q4 2015 when this VR camera is expected to hit the market. It captures stereoscopic 3D video using eight synchronized global shutter sensors, and records audio with its eight in-built microphones. The result? A full 360-degree imaging and spatially accurate original sound, minus the time-consuming process of stitching a panoramic image to achieve the same VR outcome.
ozo.nokia.com

TACTICAL ASSAULT COMMANDER 4

If you're an FPS gamer, a gamepad is generally seen as a poor tool compared to a keyboard and mouse. Hori's Tactical Assault Commander 4 for the PS4 to the rescue then. The DualShock 4's left analog stick is mapped to arrow keys, while the right analog is ported over to a mouse. The remaining buttons are accounted for by additional keys on the D-pad/mouse combo, and there's even a "snipe mode" button that changes mouse sensitivity on the fly.
hori.jp

KEM STUDIO S1

The Kem Studio S1 is a gamepad designed for adult sensibilities. With its aluminium base and tasteful walnut face, the S1 shows that gaming doesn't have to be about aggressive designs and flashing LEDs. Adjustable-height joysticks let you choose the most comfortable setup, and its buttons are lovingly textured with a rough finish for a more tactile experience. With a full complement of trigger buttons and controls, the S1 merges complete gaming experience with understated elegance.
kemstudio.com

ASUS LOLLIFLASH

The ASUS LolliFlash is a compact dual-tone LED fill light compatible with just about any smartphone. With additional lighting, you can get skin tones that look perfect in every photo. The LolliFlash also comes with multi-colored interchangeable filters that allow you to create different lighting colors with adjustable intensity levels. It can work plugged in or detached from your phone too. Go on, embrace the narcissist in you!

store.asus.com/my

SITPACK

Sitpack is touted as the most compact portable seat by its Danish manufacturers. Actually, it's built more like a resting post that allows you to rest your posterior while taking weight off your legs. People who weigh more than 130kg need not apply. Sitpack folds into the size of a canned drink and weighs about 380g. To top it off, it comes in seven different colors!

sitpack.dk

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RM4,276

Magic Arm 143N
RM434

Video Fluid Head With Flat Base MVH500AH
RM605

Zoom Remote Control LANC MVR901ECPL
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(Pj 03) DC Pro Cam SB 79579323, Foto Data SB 77274696, I One Camera SB 79577778, Camera Valley 61406188, YL Camera (M) SB 79586163, QQ Camera 016-2850010 (Kl 03) Advance Prosper SB 91728836, Foto Flash SB 22873092, Foto Shangri-La (M) SB 21423088, Grade One Photo Solution 60951998, Keat Camera Service 21480447, LTK Electronics SB 20782339, YL Camera Service 21302261, Aver Awards 77103663 (Penang 04) BH Camera & Accessories 2288681, Camzilla Photo Enterprise 3232530, Elite Photo SB 6465606, Enri Photo Trading 2262973, Fotoeasycam (M) SB 2621663, Promax Digital Concept SB 2288858, Winsion Photo Trading SB 2273191, Gadgetria, Gurney 2273433, Camera World 2611433 (Johor Bahru 07) Foto CLS 5345626, Johan Photo 2365855 (Kota Bahru 09) MM Digital Imaging (M) SB 7436266 (Sabah 088) Investline SB 225303 (Kuching 082) Great Wall 423411, Copal Digital 251653 Online & CS Dealers: www.lazada.com.my, www.shopbinki.com, www.superbuy.my, www.kexr.com.my, www.ipmart.com.my, mycameraplace.com, www.famcart.com.my

ACER XR341CK

The aesthetics of the 34-inch, 21:9 UltraWide QHD (3,440 x 1,440) curved monitor that is the Acer XR341CK is definitely a sight to behold, thanks to its smooth and sleek curvature. The XR341CK is not all style and no substance though, as it also sports a crystal-clear IPS display panel that has a 100-percent sRGB color gamut. That's not all, as the XR341CK is even equipped with flicker-less technology and a built-in BlueLight Filter to help keep your eyes feeling fresh during the longest of workdays.

Acer Sales and Services 1 800 88 1288

EPSON L565

2015 marks the fifth anniversary of Epson's presence in the Southeast Asia market and in conjunction with the celebrations, the company released the Epson L565 All-in-One printer. Ideal for small offices, the L565 is designed to be economic, with the ability to print up to 12,000 pages in B&W and 6,500 pages in color from a single set of cartridges. For ease of use, the wireless-enabled printer also has a 30-page ADF, and is compatible with mobile devices and cloud services.

Epson Malaysia Sdn Bhd (03) 5628 8288

LOGITECH G310 ATLAS DAWN

Featuring exclusive Romer-G mechanical switches, the Logitech G310 Atlas Dawn is a compact mechanical keyboard that gives you an edge in your games. With 25 percent faster actuation, you can now pawn with ease. Apart from that, there's Arx Control support, which allows you to use your iOS or Android device as a second screen.

Logitech Malaysia 1 800 88 0719

SILICON POWER ARMOR A65

The Silicon Power Armor A65 is a portable hard drive that is as tough as they come. It complies with U.S. Military drop standards, and comes fortified with three layers of shock protection to help it withstand the most jarring of drops. Its IP67 rating even allows it to be completely submerged in one meter of water for up to 30 minutes without difficulty. The USB 3.0-compatible A65 is available in 500GB, 1TB and 2TB storage capacities.

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- SharePort app (iOS, Android) & SharePort Web File Access

AC WIRELESS ADAPTER

DUAL BAND AC 1900 DWA-192

Wireless Dual Band USB3.0 Adapter

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- Supports Windows and Mac
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www.trendmicro.com.my

DELL LATITUDE 12 RUGGED TABLET

You definitely won't be required to handle Dell's Latitude 12 Rugged Tablet with utmost care, as its MIL-STD-810G U.S. military certification essentially means that it's immune to water spills, sand and dust, extreme temperatures, and drops from over four feet. Hardware-wise, the Latitude 12 Rugged Tablet comes with a glove-friendly, 11.6-inch daylight-readable HD (1,366 x 768) display, 5th generation Intel Core M processor, up to 512GB of solid state storage, 802.11ac Wi-Fi connectivity, and a dedicated GPS. Optional accessories include an IP65-rated, full-sized keyboard cover that comes with its own customizable RGB backlighting.

Dell Sales Malaysia Sdn Bhd 1 800 88 2888

SANDISK ULTRA FIT (128GB)

USB flash drives are getting smaller, and SanDisk's new 128GB Ultra Fit USB 3.0 flash drive is arguably the smallest of the lot. In fact, among 128GB USB 3.0 flash drives, it is indeed the smallest, and is probably smaller than the nail on your thumb. This means no obstruction when plugged into your notebook or in-car audio system. Being USB 3.0 also means that you get blazing-fast transfer speeds between it and the connected device.

Vector Digital Sdn Bhd (03) 2143 2822

WD MY PASSPORT FOR MAC (2015)

Portable hard drives are a dime a dozen these days, but not all of them can offer the reliability of WD's newly refreshed My Passport for Mac portable hard drive. No matter the storage requirements, you can be sure that the My Passport for Mac will be able to contain them all, as it comes with storage capacities ranging from 500GB to a massive 3TB. You won't need to worry about your files being compromised either, as the My Passport for Mac comes with 256-bit hardware encryption to keep your files impenetrable to everyone but you.

Amble Action Sdn Bhd (03) 7968 6899

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APACER AH157

Store your data and carry them with you in this stylishly compact USB 3.0 flash drive. The Apacer AH157 weighs a mere 3.7g, and comes in capacities ranging from 4GB, 8GB, 16GB, and 32GB. It's also resistant towards water, dust and shock, making it unbelievably hardy but easy to use.

- Build Technology Supply Sdn Bhd (03) 7955 3699
- Mobile Dot Com Network Sdn Bhd (03) 6257 0925
- Servex (M) Sdn Bhd (03) 8024 6688

KINGSTON HYPERX FURY DDR4

Designed to work in tandem with the new generation of Intel's 'Skylake' processors and Z170 motherboards, Kingston's HyperX FURY DDR4 memory modules are now available in 8GB, 16GB, 32GB, and 64GB dual-channel kits, with speeds of either 2,133MHz, 2,400MHz, or 2,666MHz. The memory modules also come with a lifetime warranty.

- Amble Action Sdn Bhd (03) 7968 6899
- Convergent Distribution (M) Sdn Bhd (03) 2144 1881
- Ingram Micro Malaysia Sdn Bhd (03) 7952 8188

VIEWSONIC VX2573-SG

The ViewSonic VX2475-sg is a 25-inch, Full HD (1,920 x 1,080) IPS monitor that's purpose-made to spare your eyes from the harmful rays emitted by conventional monitors, and it does so with the help of its built-in flicker-free and Blue Light Filter eye-care technologies, which works in tandem to not only reduce screen flickering, but also reduce the blue light output to help keep your eyes feeling fresh all day long.

- SDS Distribution Sdn Bhd (03) 7782 4700
- Kaira Technologies (M) Sdn Bhd (03) 7955 3669

RAZER DEATHSTALKER CHROMA

Announced at gamescom 2015, the Razer DeathStalker Chroma is a high-performance gaming keyboard with fully programmable slim chiclet keycaps and customizable backlighting zones. With a travel distance of just 2mm to actuate a letter or action, this keyboard is designed to provide superior performance when compared to the traditional rubber dome membrane switches.

- Ban Leong Technologies Sdn Bhd (03) 7956 6300

XIAOMI MI WI-FI NANO

The Mi Wi-Fi nano is a palm-sized wireless router from Xiaomi that's no wider than a typical business card. Don't take its small size for granted though, as the Mi Wi-Fi nano boasts external PCB antennas that are able to provide up to 150m2 of stable wireless coverage, and at speeds of up to 300Mbps. Unlike conventional routers, the Mi Wi-Fi nano is powered via Micro-USB, which theoretically means you can power it for 30 hours just by hooking it up to a 10,000mAh Mi Power Bank.

Xiaomi Malaysia 1 800 281 182

APACER AS2280

The Apacer AS2280 is one of the latest M.2 SSDs in the market. It is available in 120GB and 240GB variants, and offers sequential read speeds of up to 534MB/s and sequential write speeds of up to 431MB/s. It's also one of the first M.2 storage solutions to use a quad-core controller. Furthermore, it supports DevSleep mode, allowing systems that support this feature to completely shut down the SATA interface when in standby mode.

Build Technology Supply Sdn Bhd (03) 7955 3699

Servex (M) Sdn Bhd (03) 8024 6688

PLEXTOR M6V

The Plextor M6V is the company's newest entry-level SSD. The M6V is powered by Silicon Motion's SMI-2246 controller and uses Toshiba's newest 15nm Toggle NAND. Claimed read and write speeds are said to be in the region of 535MB/s and 455MB/s, respectively. Despite the entry-level positioning, the M6V will support Plextor's PlexTurbo caching technology, which can improve performance by as much as eight times in certain instances. The M6V will be available in 128GB, 256GB and 512GB capacities.

Build Technology Supply Sdn Bhd (03) 7955 3699

TP-LINK ARCHER C2600

Be prepared for the future with TP-LINK's Archer C2600. The future is MU-MIMO, where multiple devices connect to a single router without experiencing network congestions, and this router is equipped with just that technology. Speeds are faster as well, as four data streams pushes up the maximum speeds, with 800Mbps on the 2.4GHz stream and 1,733Mbps on the 5GHz stream. A 1.4GHz dual-core processor lets it handle all the load without breaking a sweat.

TP-LINK Distribution Malaysia Sdn Bhd (03) 8964 1922

AdvanceNet Technology Sdn Bhd (03) 8070 3633

M-Link System (M) Sdn Bhd (03) 6143 0888

AMD A8-7670K

The A8-7670K is the latest quad-core "Godavari" APU from AMD. Packing four CPU and six GPU cores in a single package, this budget-friendly chip is ideal for building a desktop PC with AV needs. Pop in a supported discrete graphics card, and your new rig can even double up for casual gaming.

amd.com

6THFINGER

It looks like there really is a device for everything. Targeted at mobile gamers, 6thfinger is a tiny device that interacts with a capacitive touchscreen just like you would. The 35g aluminium device taps and turns the screen in a random pattern so your mobile game remains active even while you're away. Many mobile games involve automatic battle sequences and the like, so we can definitely see hardcore mobile gamers welcoming this sixth finger into their lives.

the6thfinger.com

MIONIX CASTOR

Swedish gaming manufacturer Mionix has created a right-handed mouse that equally supports palm, claw, and fingertip grip styles. It also has a dedicated pinky and ring finger support groove for maximum comfort. Tracking is handled by a PMW-3310 optical sensor that claims zero positive or negative hardware acceleration and a 10,000 dpi resolution. Finally, its entire body is lovingly wrapped in four layers of rubber coating for a nice, textured grip.

mionix.net

NYKO TYPE PAD

Typing on the PlayStation 4 just got a lot easier with the Nyko Type Pad. This Bluetooth keyboard hooks up to your DualShock 4 controller via the headphone jack passthrough and connects wirelessly to your console. It features a full QWERTY keyboard with a small analog nub for easier directional menu navigation. Dedicated keys for '@' and '.com' also make typing email addresses and websites simpler.

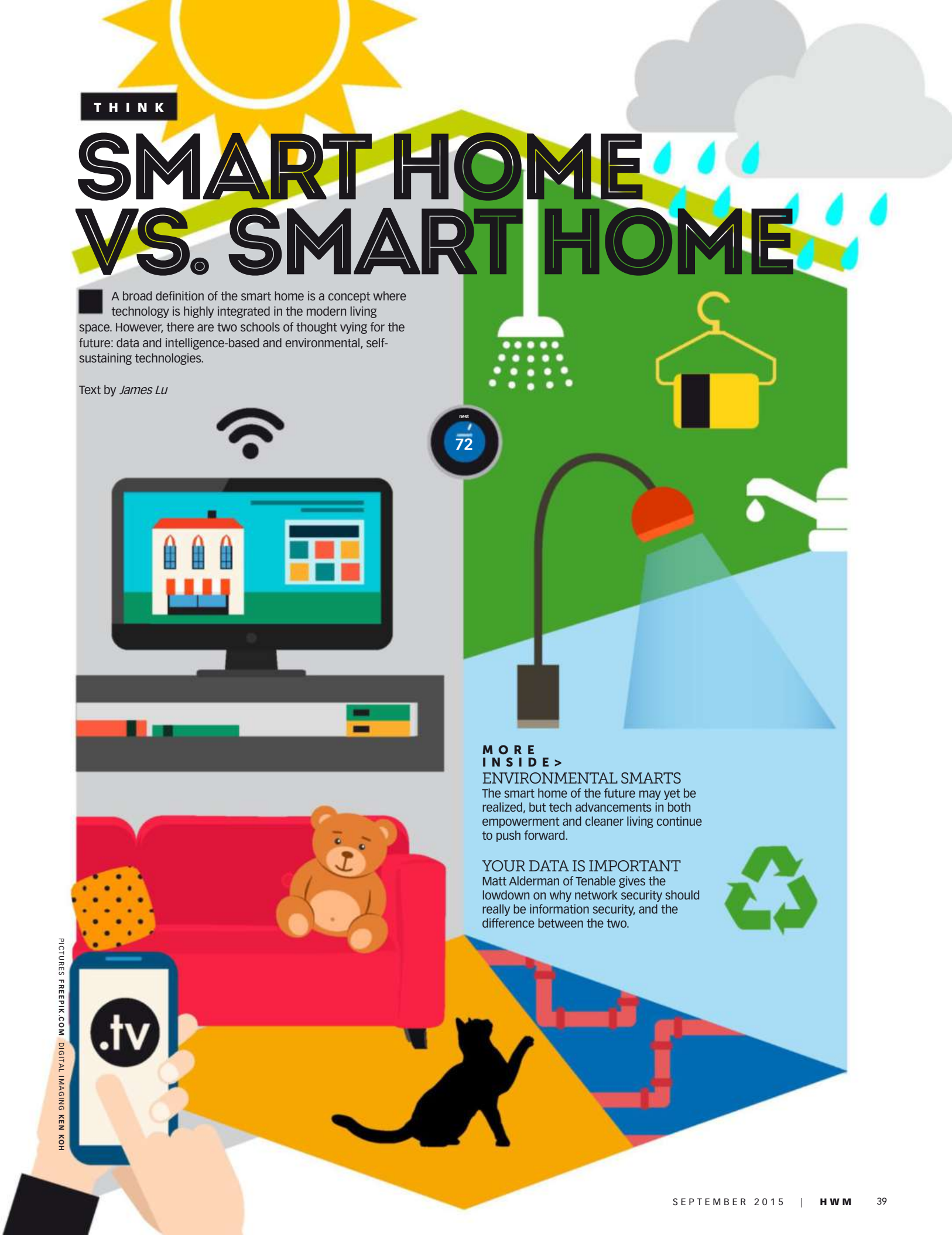
nyko.com

THINK

SMART HOME VS. SMART HOME

A broad definition of the smart home is a concept where technology is highly integrated in the modern living space. However, there are two schools of thought vying for the future: data and intelligence-based and environmental, self-sustaining technologies.

Text by *James Lu*



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MORE INSIDE>

ENVIRONMENTAL SMARTS
The smart home of the future may yet be realized, but tech advancements in both empowerment and cleaner living continue to push forward.

YOUR DATA IS IMPORTANT
Matt Alderman of Tenable gives the lowdown on why network security should really be information security, and the difference between the two.

THE HOME THAT KNOWS MORE ABOUT YOU THAN YOU DO

Your smartphone is more than just a device to make phone calls. What if every device in your home was smart?

by *James Lu*

What kind of home will you be living in a decade from now? Companies like Qualcomm, Intel, and Google will have you believe that the next big advancement in the home is deep integration with the Internet. After all, they've spent vast amounts of money pushing the Internet of Things as the next big thing.

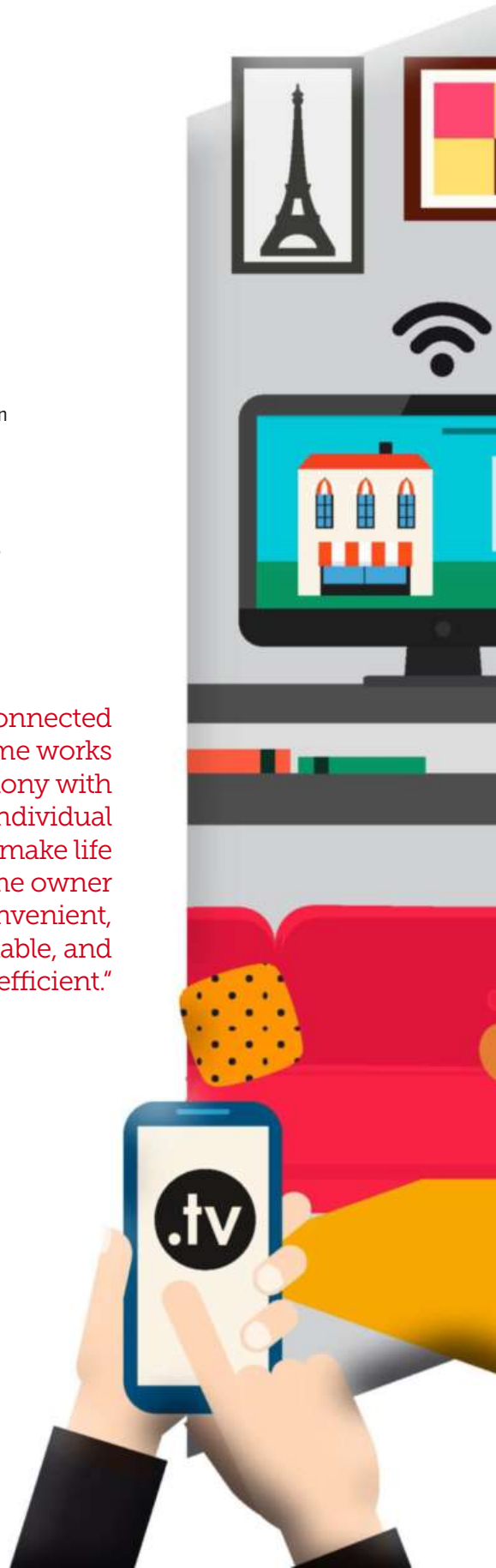
The Connected Smart Home concept is based on utilizing advancements in network connectivity to let gadgets like media streaming players and smart TVs, appliances like washing machines and microwaves, and fixtures like light bulbs, thermostats and doorknobs all communicate and talk to each other. The connected smart home works in harmony with each of its individual devices to make life for the home owner more convenient, comfortable, and efficient.

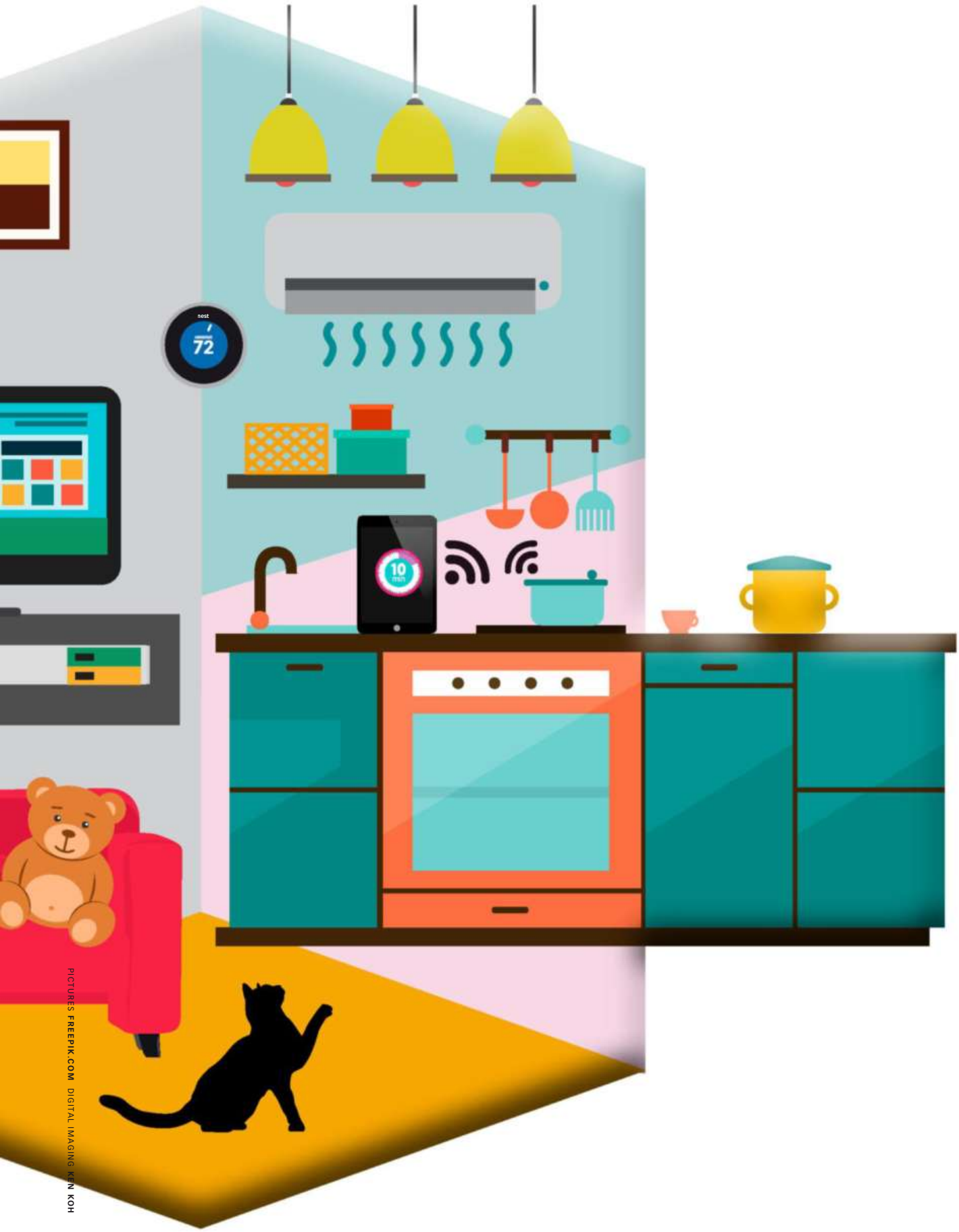
Nest, one of the most well-known smart home startups, (they were purchased by Google last year for US$3.2 billion) makes one of the most popular IoT devices currently available. A thermostat may seem like a simple device, but in a connected smart home it becomes much more. The Nest Smart Thermostat is a Wi-Fi connected thermostat with an array of sensors that primarily monitors the temperature inside your house. You can operate it manually via a touchscreen, or through a smartphone or tablet via an app. What makes Nest special isn't its connectivity – after all, remotely changing the temperature inside your house while you're not actually there only has limited appeal – but the fact that it's smart enough to learn about you and your habits. The device automatically tracks your temperature adjustments and your daily routine, so if you always come home at around 9pm, it will know to start adjusting the temperature to your ideal setting a few minutes before you arrive. It knows when you're not at home too, even when you're not sticking to your usual usage pattern, so if you spontaneously decide to spend Saturday afternoon out, it's smart enough to turn the aircon off to save you electricity and money.

"The connected smart home works in harmony with each of its individual devices to make life for the home owner more convenient, comfortable, and efficient."

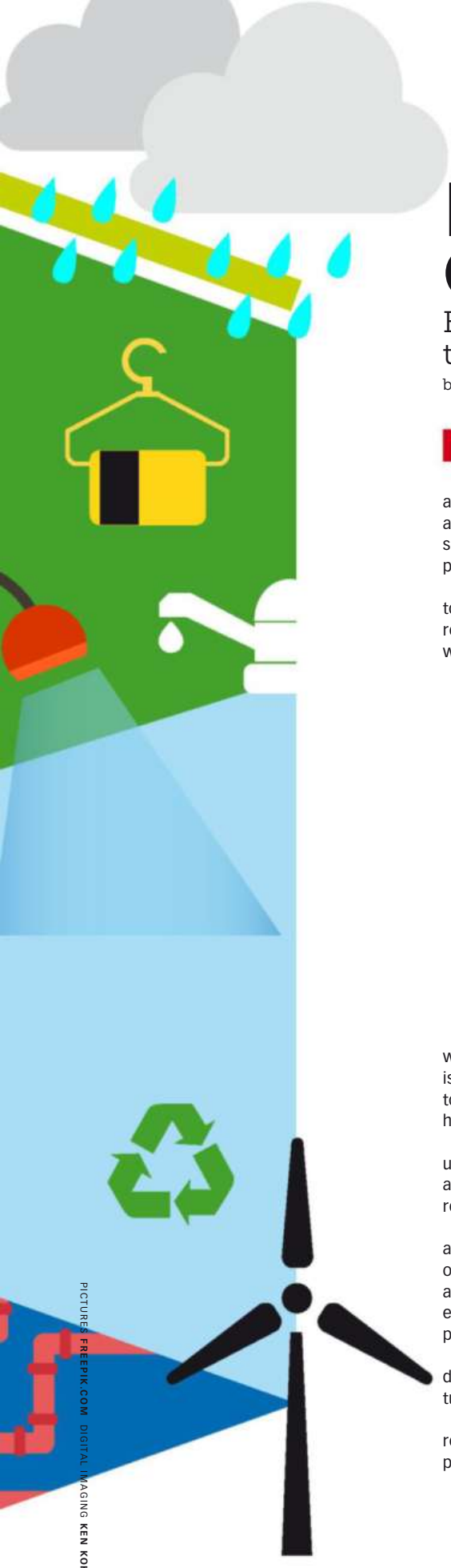
Nest is just one example of what a connected smart home can do. Imagine if every room in your house was fitted with gadgets as smart as Nest. Smart beds will monitor your sleep patterns and heart rate, only waking you when you're in a light sleep cycle, while smart washing machines with sensors for load size, degree of dirt and soiling, amount of water, and detergent required will take all the hassle out of washing your clothes. Surely, all signs point to the connected smart home being the home of the future.

But what if it isn't?





PICTURES **FREEPIK.COM** DIGITAL IMAGING **KEN KOH**



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LIVING SMART OFF THE GRID

Because, what happens to your smart devices if the power grid goes down?

by *James Lu*

Away from Silicon Valley, a few companies are developing a very different kind of smart home: the Sustainable Smart Home.

Japanese automobile manufacturer, Honda, is at the forefront of this alternative approach. Its HSHS (Honda Smart Home System) is built to provide total self-reliance, and features a lineup of innovative energy production, management and conservation solutions, which the company hopes will free homeowners from the reliance of on-grid power supply.

Two model homes, one in California, U.S., and another in Saitama, Japan have been built to test the concept. Included in each house is a 9.5kW solar cell system mounted on the roof, a co-generation system driven by a specially-designed high-expansion-ratio engine, which provides combined power generation and heat recovery efficiencies of up to 92 percent, a high-capacity battery that stores all energy produced, plus a central control hub called the Smart e Mix Manager that ties everything together.

"Japanese automobile manufacturer, Honda, is at the forefront of this alternative approach. Its HSHS (Honda Smart Home System) is built to provide total self-reliance, and features a line-up of innovative energy production, management and conservation solutions."

A geothermal heat pump provides the house with hot water, as well as its temperature control. Water is heated in a tank and delivered to the shower. As the shower drains, the water is re-used to help preheat the reserve water tank, reducing the energy required to provide hot water to the home. Once it has fulfilled its hot water duties, the water drains into four underground thermal tanks. Here, heat from the earth warms the liquid further, turning it into what the team calls Ground Source Fluid. This fluid is then returned to the house and driven through pipes located in the floor, roof and ceiling to provide heating. Alternatively, cold water can be pumped through the system to cool the house in the summer months.

On top of optimizing home energy use, the HSHS will alert the homeowner of lights and utilities that could be turned off before leaving, allow voice-recognition remote control of appliances from on the road (with Honda's Internavi in-car telematics system), and provide real-time feedback on all components.

All of these factors result in a home that Honda says is three times more water-efficient and uses half the energy of similar-sized homes in the U.S. and Japan. A typical home of this size will use around 13.3MWh of electricity per year, but the Honda smart home actually generates a surplus of 2.6MWh. Honda says this equates to an offset in carbon emissions of nearly 5,942kg per year. This excess energy can actually be sold back to the power grid, earning the homeowner some extra money.

Future plans might add a water filtration system too, which would collect rain and dew to allow for a self-reliant water source. There's also the possibility of additional wind turbines to complement the solar panels.

Honda has plans for construction of additional homes and will continue testing and refining the system until at least 2018, when it estimates that consumers may be able to purchase and live in one. And that estimation, is only three years away.

Q & A

Individuals are the keys to security

MATT ALDERMAN, VICE PRESIDENT OF STRATEGY, GLOBAL, TENABLE NETWORK SECURITY

by *Marcus Wong*

For starters, what's the difference between "Cyber security" and "Network security"?

That's interesting because I've never actually thought about it that way. I don't actually use that term; I don't like it because it implies certain connotations.

"Network security" is probably closer, but I think it's more "Information security" when you think about it. What is it that we're trying to protect? We're trying to protect information and that information happens to live on a network or in the Internet and so when you define security holistically, "network" is a part of it, but there are a lot of other pieces to that puzzle.

How real are threats to enterprises and individuals, and what are the main difficulties to preventing these threats?

Definitely the threats are real. There's no doubt about that. I think it starts with the individual. If you look at what the traditional sophisticated attack has done, it starts with an individual – it's a phishing attack, it's some sort of social engineering that starts the majority of the breaches we see around the world.

So it's getting people to trade convenience for security. But also how much we can count on authentication methods that rely on human memory isn't it?

Right, because if they write it down on a post-it and place it on the screen, there's no point. We have to find a way to make it easier, and one of the things that have been brought up is: how do you link the identity to who you are as a person? Whether it's biometrics, finger prints, retina, these are things that are with you that identify you uniquely versus a passcode or phrase that you have to try to remember.

What Apple's done with Touch ID is very interesting. It's very easy to get to your phone now, and I think it's at a convenience level that people will use. So we definitely have to have those balances.

That said, what are some of the misconceptions that organizations and institutions have regarding risks and management compliance?

The biggest is that we think we're not susceptible to being compromised. I think the first assumption that we have to make is that: we have data that is valuable and someone is going to want it. Period.

That means we have to value information more. If we look at the way we spend on security as a portion of the IT budget, it's not equivalent to the value of the data that you're trying to protect. So the first mistake that I think everybody makes is not recognizing the value of the data you're trying to protect and therefore not spending enough to protect it.

Everyone has to understand that yes, your information is valuable, and yes, someone is going to come after it, and you're going to have to spend money to protect it.

Compliance is slightly different. Compliance is a mandate that says: "Thou shalt do a number of things"…

And you will be safe?

And you will be safe! But "compliance" does not equal "security". If we've learnt nothing else from breaches so far, it's that we've turned security into a "check box" mentality. We deploy solutions to meet the letter of the law and not the spirit of the law. And I think that's a mistake when it comes to what we've done on compliance.

Compliance has its place, but we have to understand that compliance does not equate to security. I think a better solution would be to build a holistic security program where compliance is an outcome of the program. So, "security" could equal "compliance" but not the other way around.

How can the average person contribute in terms of cyber security when even governments and large enterprises are struggling?

It's… difficult. Because human beings are lazy. Right? We want what we want and we don't want to have to think about security. And we've almost made it OK for people not to have to worry about security.

For example: In the States, if you lose your credit card, it costs you nothing financially. We've put in place protection measures for the individuals so they don't care. If there's no impact to me as an individual, why would I change? So, very few people feel the impact of security breaches for example, and because of that, we're not very likely to change.

PHOTOGRAPHY **DARREN CHANG** ART DIRECTION **KEN KOH**

> …in a few years' time, probably your smartphone will be as good as the top-of-the-range cinema-quality cameras, and that's very exciting.

The challenges to TV programming today

NEIL NIGHTINGALE, CREATIVE DIRECTOR, BBC EARTH

by *Marcus Wong*

How would you describe today's 'television' programming and the challenges television faces from the likes of OTT and On-demand players?
Well, the television world now is so diverse that I think the most important thing, whether it's television, OTT or streaming services, is having really great content. Be it great stories or great visuals, we simply have to find the best way to get those out to the audience. So the variety of different ways that audiences now tap into content is a great thing, because it just means you can reach more people in more different ways with fantastic stories.

Have you found that new technologies give you better access to people now?
Well, technology is incredibly important; it always has been in film-making. Now you can film great stories on everything - from your mobile phone to a cinema-quality camera. In fact, in a few years' time, probably movies from your smartphone will be as good as the top-of-the-range cinema-quality cameras, and that's very exciting.

Tech allows you to get amazing stories; great content from all kinds of different sources. For example, on our website now we have a downloadable app called Earth Capture where people can – from wherever they are - upload short videos to our website, so we have a great connection now with our audience in ways that we just couldn't have had before.

How would you say the demands of your audience have changed? As you have more tech, do you have more expectations?
I think audiences now are incredibly demanding, and I always think of audiences almost like addicts – you know, you give them something new and that's fine this time, but then they want something else new and something better, and better…

And so, if I had to come up with one word to sum up what we're always going to do, it's that we're always trying to surprise audiences. With new places, new animals, new stories, new behavior, new perspectives… and we research the world to bring new stories. And then of course, technology is very important. One of the trends at the moment in wildlife films is ever-greater immersion; putting audiences at the heart of the action, and the new digital cameras that we're using now allow us to do that in ways that the film cameras that we were using could never do.

Because they're miniaturized, they allow us to pretty much put cameras wherever we want to in relation to our subjects. So we're able to be with animals, trek with animals, trek through landscapes and the environment in ways that we could never do before. But what's really important is that you don't just do that gratuitously. You do it in the service of the story, so that you are able to give your audience an insight into your subject and the stories that you are telling.

What's the key to providing cinematic quality to television?
I think two things: one is dramatic storytelling and characterization. And that means emotionally engaging with your subjects, with your characters; telling stories in an emotional, engaging, and dramatic way. And then the other is immersing the audience – getting close to the action so that the visuals complement the immersive story-telling.

What are the "most" essential tech tools that you pack for film-making of this nature?
laughs Well, I think the most essential tools that you pack are: a lot of patience, a lot of determination, and a sense of humor, because ultimately, whatever technology you're using it comes down to us. It comes down to the human being. Shooting nature is difficult! So it's the humans; it's the team you take with you that is the most important thing you pack for a nature shoot.

The one tip for an amateur nature filmmaker trying to do some nature films?
The great thing today is that we can now shoot nature films with "consumer" technology. There are so many great digital cameras that shoot HD quality. Even your mobile phone can shoot nature films! So, it's (about) finding a subject that you're passionate about that you can access and shooting it again and again, in different ways.

PICTURE BBC

A GREENER REVOLUTION: ENERGIZING THE FUTURE WITH TECH

by *Koh Wanzi*

The rise of high technology has alternately been mankind's greatest crutch or boon. It's easy to get swept up in this giddy wave of cool advances in technology. With news of delivery drones, artificial neural networks and too-smart digital assistants dominating the headlines, it's difficult to see how any of this could be bad. And it isn't, really.

But as we gaze starry-eyed at virtual worlds and zoom in on microscopic transistors, it can almost appear like all this is taking place in a vacuum. It doesn't, and the technological revolution could either help kickstart newer and greener ways to power our world, or serve as yet another source of emissions to warm the planet. We take a look at both sides of the coin.

Home Batteries

Powerwall is a wall-mounted Lithium-ion battery that can store energy from the grid or rooftop solar panels. There are two models – a 10kWh one for backup applications and a 7kWh one for daily use. It is intended to work in tandem with a solar panel and an electrical inverter (converts DC to AC current) to store surplus energy from solar panels and even utility grids.

It's being billed as a way for solar power to finally become feasible. Previously, solar power ran into the problem of how to power homes at night, which made it impractical for homes to be fully dependent on it. One of the key hurdles to more widespread adoption of renewable energy has been its inability to be generated on-demand. But the ability to store the energy in batteries like the Powerwall could sweep aside such arguments and make it possible for entire electric power grids to be constructed based on millions of these units.

At least, that's the vision of Elon Musk. The Tesla CEO said that 160 million of these units could replicate the power grid of the U.S., and two billion such units could power the world.

There's even a commercial system offering 100kWh of storage. 100 units of these can be stacked to form a 10 megawatt-hour unit to be used on the scale of small electricity grids. The home-based units can be installed together to create micro electrical grids as well.

Of course, the Powerwall isn't ushering in an energy revolution just yet. Existing net-metering rates in the U.S. allow customers with solar panels installed to sell excess energy back to the grid. It thus makes more financial sense for them to send electricity directly back to the grid rather than storing it, especially when a paper published in the journal Energy Policy recently found that staying connected to conventional electrical grids was still cheaper.

But home batteries are by no means a failed project. Tesla's Powerwall is sold out through the middle of 2016, so demand and interest is definitely there. They're just a hair ahead of the times, and when existing market frameworks and incentives catch up, they could be part of a new era of widespread reliance on renewables.

PICTURES UNSPLASH, TESLA

Solar Walkways

Last year, the Netherlands became the first country to build a solar road – a bike path paved with glass-coated solar panels. In May, reports emerged that the road was working even better than expected, generating 3,000kWh over six months, enough to power a small household for a year. SolaRoad, the group behind the Netherlands project, estimates that similar installations could generate more than 70kWh per square meter per year.

Here's some perspective: the Netherlands bike path was just 70m, but in 2012, the U.S. had over 6.5 million km of roadways. In 2013, India's road network spanned over 4.5 million km. If even just a fraction of these could be turned into areas for harvesting solar energy, the potential could be limitless.

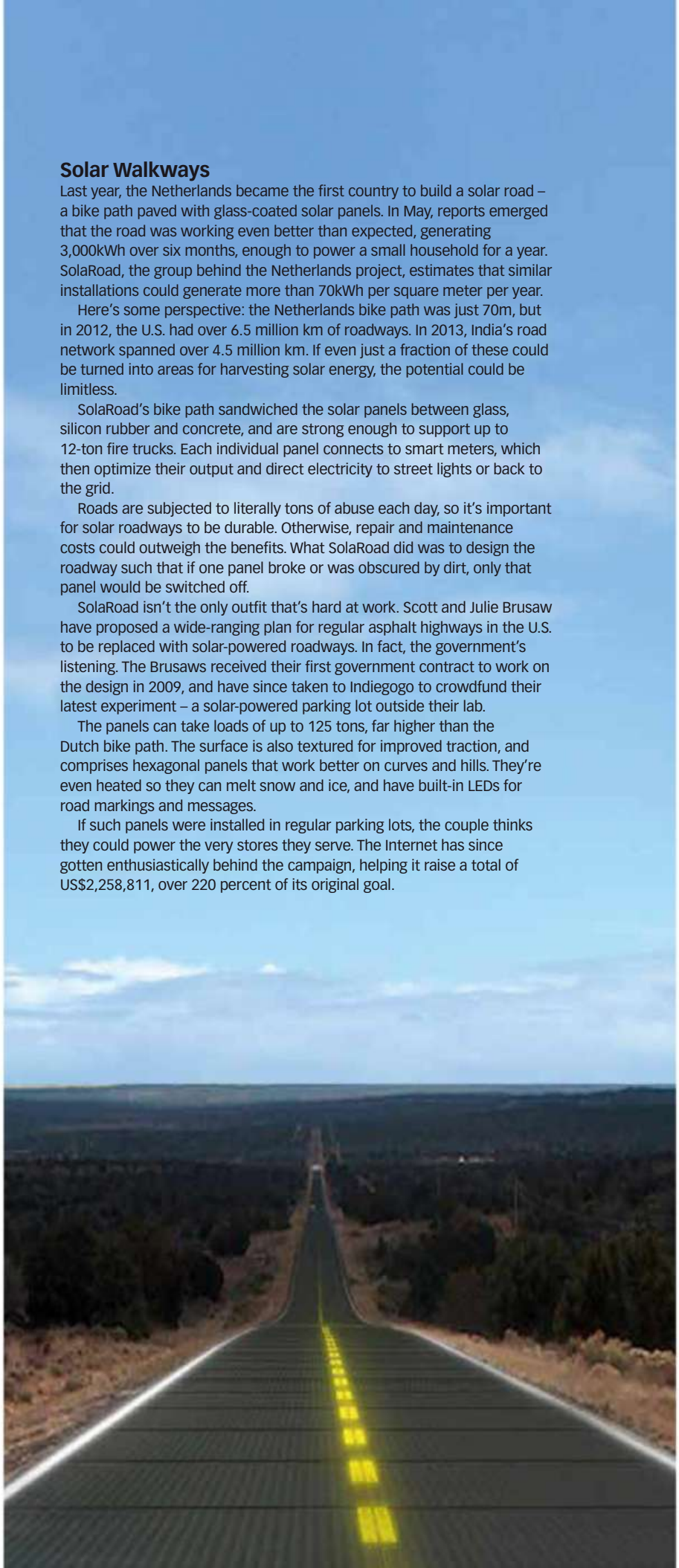
SolaRoad's bike path sandwiched the solar panels between glass, silicon rubber and concrete, and are strong enough to support up to 12-ton fire trucks. Each individual panel connects to smart meters, which then optimize their output and direct electricity to street lights or back to the grid.

Roads are subjected to literally tons of abuse each day, so it's important for solar roadways to be durable. Otherwise, repair and maintenance costs could outweigh the benefits. What SolaRoad did was to design the roadway such that if one panel broke or was obscured by dirt, only that panel would be switched off.

SolaRoad isn't the only outfit that's hard at work. Scott and Julie Brusaw have proposed a wide-ranging plan for regular asphalt highways in the U.S. to be replaced with solar-powered roadways. In fact, the government's listening. The Brusaws received their first government contract to work on the design in 2009, and have since taken to Indiegogo to crowdfund their latest experiment – a solar-powered parking lot outside their lab.

The panels can take loads of up to 125 tons, far higher than the Dutch bike path. The surface is also textured for improved traction, and comprises hexagonal panels that work better on curves and hills. They're even heated so they can melt snow and ice, and have built-in LEDs for road markings and messages.

If such panels were installed in regular parking lots, the couple thinks they could power the very stores they serve. The Internet has since gotten enthusiastically behind the campaign, helping it raise a total of US$2,258,811, over 220 percent of its original goal.



Harnessing the Breeze

Back in July, Denmark reported producing up to 140 percent of its electricity demand in just over a day. As a result, it was even able to export excess power to neighboring Norway, Germany and Sweden.

As one spokesman for the European Wind Energy Association aptly said, "It shows that a world powered 100 percent by renewable energy is no fantasy." Denmark has long been a strong proponent of wind energy, and it is well on track to meet its target of producing half of its energy from renewable sources by 2020 or earlier.

But not all countries have the luxury of so much open land like Denmark, which gets around three-quarters of its wind capacity from onshore wind farms. Fortunately, it seems like a Spanish company called Vortex Bladeless has thought of that. As the name suggests, they make wind turbines, minus the blades.

The new design helps save space, given that there are no huge rotating blades to consider. The company says you can double the number of turbines in the same space with its design, or – it stands to reason – put the same number of turbines in half the area.

There are additional advantages to the design, like an absence of mechanically moving parts. This means they are potentially cheaper to manufacture and maintain – Vortex Bladeless estimates an 80 percent reduction in maintenance costs – which could make it more palatable to cost-adverse governments.

Each thin, cone-like structure is made from carbon fiber and fiberglass composite, which allows it to vibrate in the wind as much as possible. These oscillations are what allow it to generate electricity. When the cone moves in one direction, two rings of repelling magnets at the base pull it in the other, and the kinetic energy is then converted to electricity.

It relies on an aerodynamic effect called vorticity, which produces a pattern of spinning vortices along structures. Vorticity can cause undesired oscillation in structures like bridges and compromise their integrity, but Vortex Bladeless will now harness and maximize these structural oscillations with its design.

PICTURES **SOLAROAD, VORTEX BLADELESS**

Data Pollutes

But before rushing to embrace technology as a harbinger of greener times, remember that there's always two sides to the coin. The rise of media streaming and the cloud means that service providers are constantly erecting new data centers or expanding existing ones to keep up with demand.

According to Greenpeace's latest Clicking Clean report, data centers are on track to become a significant source of electricity consumption in the IT sector. By 2017, they may comprise 21 percent of the sector's power use, more than even manufacturing's 16 percent.

Data center emissions are growing by at least 13 percent every year, and the entire IT sector is expected to comprise between seven and 12 percent of global electricity consumption by the end of 2017. This applies to other industries as well, and publishers are consuming more energy because of greater data center usage, even more than they did through printing presses.

In the U.S., many data centers belonging to the likes of Apple, Google and Facebook are located in North Carolina and Virginia, states which are heavily reliant on "dirty" energy like fossil fuels. Early this year, Amazon Web Services announced plans to build another data center in Virginia, while Microsoft announced similar expansion plans the year before.

While most of these major players have committed to sourcing more of the power for their data center from renewable sources, energy utility monopolies in the two states pose significant barriers. Short of building solar farms like Apple has done, there is no clear path to renewable energy for data centers as a monopoly like Duke Energy generates only 2 percent of its energy from renewables.

A similar problem exists in Taiwan, where Google is set to significantly expand its data center operations. Renewables account for just 4 percent of the nationally-owned Taipower's generation mix, and just like energy monopolies in the U.S., customers like Google are not allowed to buy electricity from anyone else.

Put simply, technology isn't inherently good or bad. Things like the cloud have the potential to shape our lives for the better, but only if they're developed responsibly. The world's energy use will increase, and in order for technology to put its best foot forward, green technologies must get the attention and support they deserve.

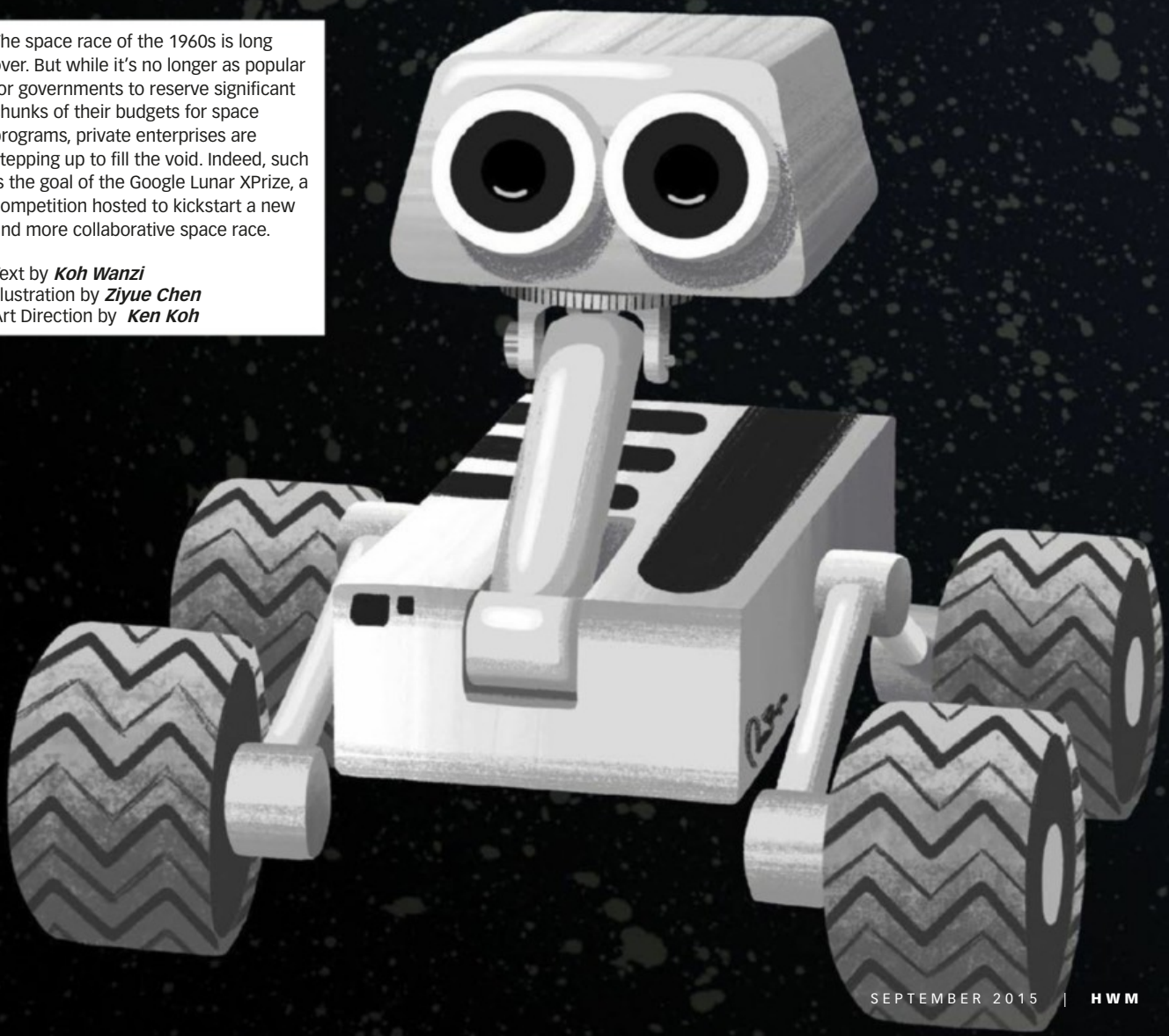
PICTURES GOOGLE

FEATURE

CONQUERING SPACE THROUGH PRIVATE ENTERPRISE

The space race of the 1960s is long over. But while it's no longer as popular for governments to reserve significant chunks of their budgets for space programs, private enterprises are stepping up to fill the void. Indeed, such is the goal of the Google Lunar XPrize, a competition hosted to kickstart a new and more collaborative space race.

Text by ***Koh Wanzi***
Illustration by ***Ziyue Chen***
Art Direction by ***Ken Koh***



A NEW ERA

Private enterprises and individuals could drive a new era of friendly competition and cooperation in space technology.

As a lone blue marble suspended in a void powdered by stars, Earth cuts both an immeasurably beautiful and lonely figure. For all of our technological advancement, space continues to dazzle and inspire us, constrained as we are by our gravity-bound perspective.

Space should also unite us and remind us of our common humanity, so it's ironic that one of our key milestones as a species – putting a man on the Moon – was driven by a space race between two hostile world powers.

U.S. government spending and the geopolitical situation of the time powered the Apollo missions. The space race of the 1960s saw NASA receive its highest ever budget, at 4.5 percent of the U.S. federal budget. However, as Cold War tensions died down, government support for space missions dwindled.

Even though we continue to probe the depths of space – New Horizons recently returned long-awaited images of Pluto – much of the political capital to pool resources into space missions has waned, and it seems a poor choice to rely entirely on government-sponsored research to advance our reach into space.

Privatization is the way forward, which is what the Google Lunar XPrize is aiming for. Space doesn't have to be seen as the sole prerogative of big government budgets, and private individuals and enterprises can hop aboard to make these moonshots a reality.

We've rounded up a handful of teams for a closer look at their efforts to land a rover on the Moon, and the possible implications of their long-term visions.

• • •

Part-Time Scientists

This 70-strong team based out of Germany recently teamed up with Audi to incorporate the latter's Quattro four-wheel drive technology in a Moon rover. The Quattro four-wheel drive technology is found in cars like the Audi S8, and serves as a prime example of private enterprises – even those that appear far removed from space exploration – getting onboard with the development of space exploration technology.

The Audi Lunar Quattro, as it is named, will be powered by a Lithium-ion battery pack that is supplemented by energy collected by its 30cm^2 solar panel. The Moon has no atmosphere, which means that there will be no clouds to block out sunlight and temperatures can rise to over a 100°C. On the bright side of the Moon at least, there should be an abundance of energy for this moon rover.

Each wheel has a dedicated electric motor for all-wheel drive traction to help it better traverse the rocky lunar surface. Its top speed is a stately 3.6km/h, roughly the pace of a leisurely walk.

Double wishbone suspensions are used for all four wheels, each of which can be rotated a full 360°. This type of suspension provides engineers more freedom to work with. For instance, they're able to work out the effect of moving each joint, so the suspension and wheel motion can be optimized. It is also easier to determine the loads that different parts will be subject to, thus allowing more lightweight parts to be incorporated.

These are all arguably valuable advantages to have in a Moon rover. On foreign terrain like the Moon, you want a nimble rover that has been tuned to overcome obstacles and navigate reliably. Furthermore, weight savings are key in space transportation, where every gram shaved off can translate into savings in both fuel requirements and launch vehicle costs.

Two cameras are mounted to a moving head at the rover's front, capable of capturing detailed, stereoscopic images and sending them back to Earth. A third camera is directed at the ground, used to study lunar materials and take high-definition images.

The Lunar Quattro is constructed primarily with high-strength aluminum, and it tips the scales at around 35kg. However, there are plans to reduce the weight of the final design with the use of

PRIVATIZATION IS THE WAY FORWARD, WHICH IS WHAT THE GOOGLE LUNAR XPRIZE IS AIMING FOR.

Google Lunar XPrize

The XPrize Foundation is a non-profit organization that wants to serve as a catalyst for change and innovation. It believes that competition and incentives are what drive innovation and progress. To that end, it holds public competitions to give entrepreneurs and inventors the platform and motivation they need to pull out all the stops.

The Google Lunar XPrize has a fairly audacious goal – creating a new era of affordable access to the Moon and beyond. Beginning in 2007, the Lunar XPrize attracted 29 teams from 16 countries to compete for its US$30 million prize purse. Today, just 16 teams remain, with until the end of 2016 to secure their goal of landing a rover on the Moon, travel 500m, and transmit high-definition video and images back.

FOR THE GOOGLE LUNAR XPRIZE, ASTROBOTIC HAS DEVELOPED GRIFFIN, A LARGE-ISH MOON LANDER ABOUT 1.6M TALL AND 4.5M WIDE.

The Eighth Continent

The Moon is often romanticized as the eighth continent. As Earth's closest neighbor, the Moon has been held up as a potential goldmine for resources like rare earth and platinum-group elements. The uses of these elements span a wide gamut, ranging from TV sets and cancer treatments to catalysts in manufacturing processes.

The Moon is the new Africa, an entirely new Dark Continent – mysterious, uncharted, and nearly unmarked territory up for the grabs. But this time, the contenders aren't European colonizers, but the entire human race.

Astrobotic

Astrobotic has a lofty goal – the democratization of Moon landings. As a lunar logistics company that aims to allow individuals, organizations, and countries to deliver payloads or packages to the Moon, Astrobotic wants to make lunar deliveries more accessible.

For the Google Lunar XPrize, Astrobotic has developed Griffin, a large-ish Moon lander about 1.6m tall and 4.5m wide. Given its lunar delivery goals, it's no surprise that Griffin is equipped with flexible payload mounts for a variety of cargo.

The lander is tricked out with its own smaller, surface rover (called Andy), but it can be adapted to carry other payloads to support robotic missions like surface sampling, regional prospecting, and skylight (holes in the Moon's surface) exploration. Griffin is a fully automated lander, relying on software to parse data from onboard cameras, an inertial measurement unit (IMU), and laser-based remote sensing technology (LIDAR) to ensure smooth and accurate landings.

Its onboard avionics systems are rugged and radiation-tolerant and can land the craft within 100m of any targeted landing site. On approach to the Moon, the Astrobotic Autolanding System compares images from the lander's cameras with high-resolution NASA lunar surface images to determine the craft's position and altitude. As it nears the surface, LIDAR is used to construct a 3D model of the surface of the landing zone and help it avoid hazards like slopes and rocks.

Griffin's main frame is constructed of aluminum, and its profile from the front vaguely resembles a giant spider. Its four legs absorb the shock of touchdown and help stabilize the lander.

In addition, it is equipped with an isogrid (a metal sheet with a triangular grid pattern) deck that can accommodate payloads both above and below it. Griffin is further outfitted with a frustrum ring at the top and radial stiffeners at the bottom for other types of cargo like satellites.

To give you an idea of what lunar logistics services to the masses might look like, Astrobotic is hosting an interactive mission design worksheet on its website that lets you indicate things like your payload type, destination (lunar orbit or landing?), and if you intend to deploy it to the surface. In fact, it's also running a program called MoonMail, that lets people send various mementos to the Moon onboard Griffin.

• • •

Hakuto

Hakuto will deploy a unique, dual rover system to explore the lunar surface. Scientists have speculated in recent years that the lunar surface may actually host underground caves and tubes similar to those found in volcanic areas on Earth, and Hakuto wants to use its rovers to access these areas.

As private enterprises turn their gaze toward the stars and lunar exploration, a lunar base could eventually prove invaluable. However, such a base would need to be shielded from the radiation, micrometeorites, and extreme temperatures that pummel the surface. These underground geological features could serve as prime locations for future lunar bases, which is why Hakuto is so keen on exploring them.

Moonraker, Hakuto's larger four-wheel rover, will be tethered to a smaller two-wheel rover called Tetris that weighs just 2kg. At just 270 x 540 x 210 mm, Tetris can be easily lowered down into narrow tubes by Moonraker.

Moonraker itself is fairly compact, measuring just 480 x 600 x 540 mm and weighing only 8kg. These diminutive envoys to the Moon thus exemplify the strengths of Japanese engineering – the miniaturization of complex machines and tight integration of electronics. Moonraker and Tetris are constructed using strong, lightweight, autoclave-molded carbon fiber reinforced plastic materials, most commonly found in aircrafts and rockets. Both rovers are built to withstand the harsh lunar temperatures, which can range from -150°C to over 100°C. The wheels are also made using a thermal insulation material to insulate the rovers' bodies from the thermal fluctuations of the lunar surface.

In addition, because the Moon's surface is covered with extremely fine and abrasive sand called regolith, the wheels are also rugged enough to handle the soft and treacherous terrain. Multiple fin-like structures appear designed to dig deep into the regolith for better traction.

A hyperbolic mirror camera system on Moonraker allows it to capture 360° images. Images and data from other sensors will be used in Simultaneous Localization and Mapping (SLAM) to make sense of its surroundings and estimate its location. SLAM is used expressly for constructing a map of an unknown environment. It is designed to work on incomplete information and achieve operational success rather than a perfect picture, which makes it suitable for lunar landings.

Hakuto's rovers will actually be hitching a ride on Astrobotic's Griffin lander to the Moon. Not only does this demonstrate Griffin's ability assist in future robotic missions, it also allows Hakuto to focus entirely on rover development.

Omega Envoy

Backed by the non-profit Earthrise Space Foundation, Omega Envoy aims to create a viable commercial lunar delivery service for a future space transportation industry. It's named its rover Sagan, after the renowned astrophysicist and researcher.

Sagan also looks a lot like the endearing trash-collecting robot Wall-E in Pixar's animated film, with a similar head that houses two large lenses. But don't let its adorable looks fool you. The rover packs some advanced technology and recently completed successful mobility and visual tests at NASA's Lunar Regolith Bin, the largest indoor simulation of the lunar surface.

Because of the charged particles in solar wind, lunar soil is very dusty and sticky. The fine particles are also jagged, which means they can scratch spacesuits, face shields, and camera lenses. This is a problem for rovers, which need to maintain clear, unsullied lenses in order to transmit clear images back to Earth.

To that end, Sagan will be using an EDS (Electrodynamic Dust Shield) to keep dust away from Sagan's cameras. The shield itself is a transparent indium tin oxide painted on glass. EDS technology is able to lift and transport soil particles by applying dielectrophoretic forces to them. By printing a basic pattern on materials – in this case the indium tin oxide – researchers can send out high voltage signals to generate a non-uniform electric field to control the direction of the soil.

• • •

All in the Spirit of Competition

Competition between the U.S. and the Soviet Union propelled an era of technological progress in the space race, and maybe competition – of the friendlier sort this time – can help spark off a new space age.

Audi's collaboration with Part-Time Scientists on the Audi Lunar Quattro shows that even terrestrial technologies can have applications in space. And once these technologies have been adapted for and proven in space, it stands to reason that they could be used in extreme environments back on Earth for applications like disaster rescue and scientific research.

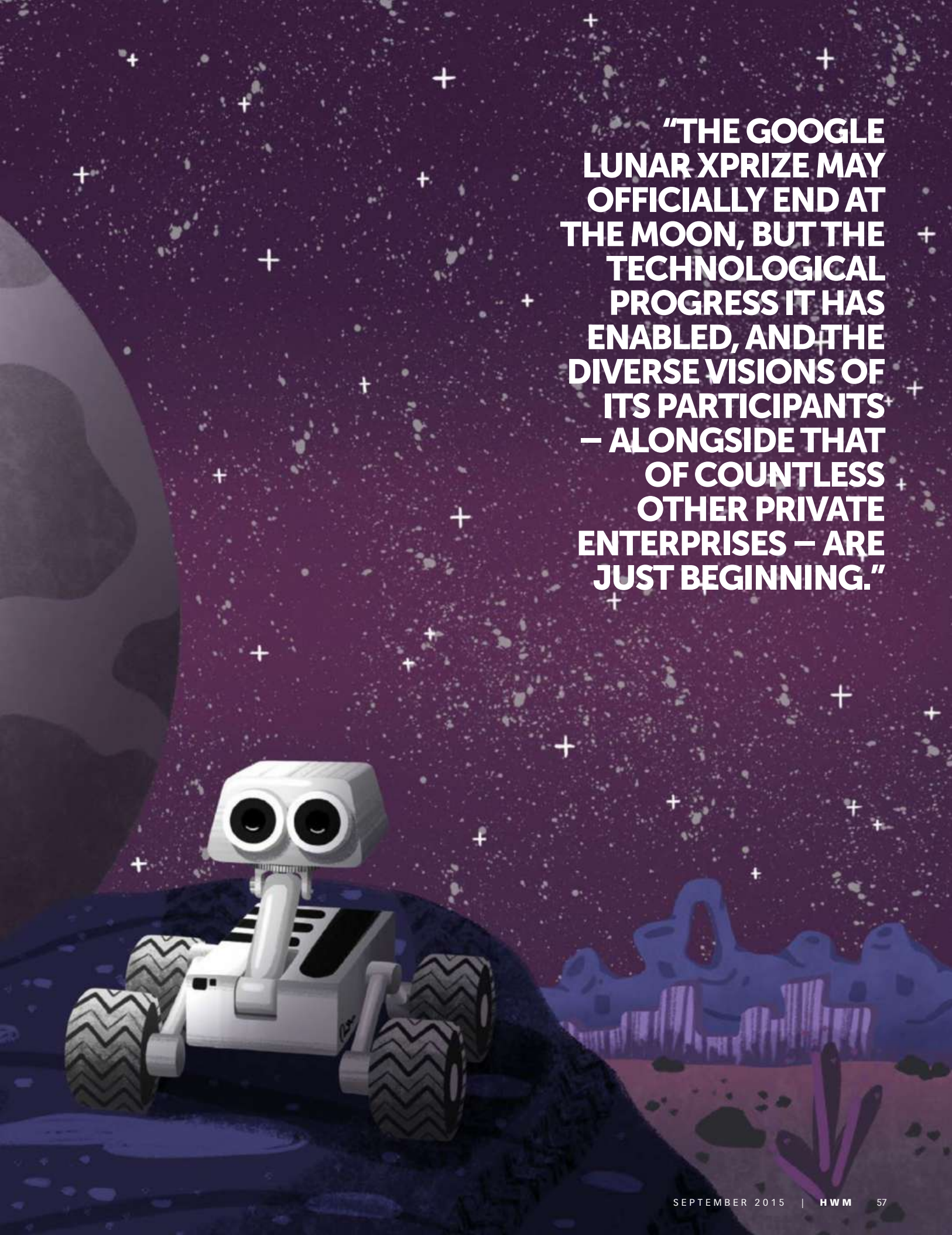
Astrobotic and Hakuto's partnership also illuminates a probable way forward for private enterprises looking to make their mark in space. While the space race of the 1960s saw each nation guarding their technology fiercely, the 21st-century version of the space race could see private companies with varying strengths and interests combine their expertise to achieve their goals.

The company behind Hakuto, ispace technologies, envisions space as simply new territory for humans to explore, gather resources, and eventually settle. Its partnership with Astrobotic thus lets it focus on developing the right technology to achieve its goals. In turn, Astrobotic is working with fellow NASA contractor and space transportation company SpaceX to launch its Griffin lander into space on the latter's Falcon 9 rocket.

On the other hand, the Earthrise Space Foundation, which backs Omega Envoy, has set its sights on providing private companies, government agencies, and other institutions with affordable resources to undertake space exploration. Astrobotic itself goes a step further by aiming to bring a semblance of access to the Moon down to the level of the everyday man.

Again, we're reminded of how things have changed from the time when only rich governments had the resources to take on space. The Google Lunar XPrize may officially end at the Moon, but the technological progress it has enabled, and the diverse visions of its participants – alongside that of countless other private enterprises – are just beginning.

When Griffin's Andy and Hakuto's Moonraker and Tetris rovers reach the moon, they intend to engage in a friendly race to the finish line. They may be competitors, but regardless of who prevails, it will be another small step forward for mankind. HWM



"THE GOOGLE LUNAR XPRIZE MAY OFFICIALLY END AT THE MOON, BUT THE TECHNOLOGICAL PROGRESS IT HAS ENABLED, AND THE DIVERSE VISIONS OF ITS PARTICIPANTS – ALONGSIDE THAT OF COUNTLESS OTHER PRIVATE ENTERPRISES – ARE JUST BEGINNING."

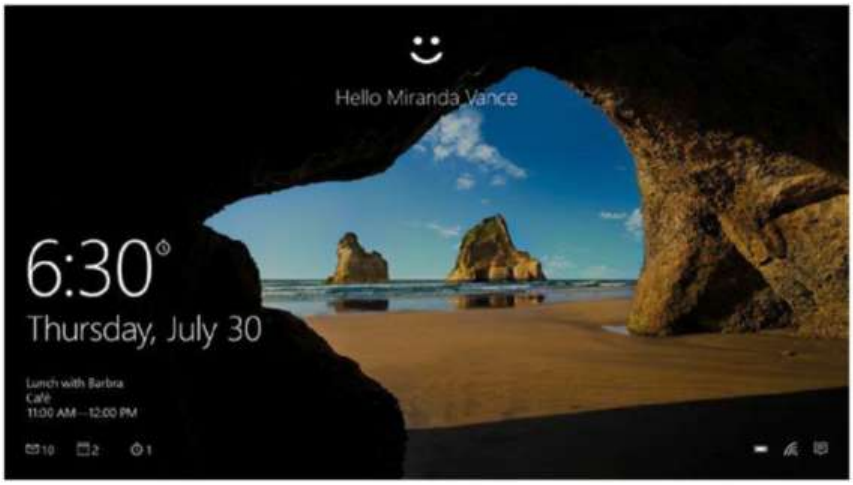
AFTER THE JUMP

Since launching worldwide on July 29, Windows 10 has been installed on more than 14 million PCs and tablets. As you may already know, Microsoft is boldly offering the new OS as a free upgrade for users running genuine Windows 7 and Windows 8.1 devices, provided they upgrade to Windows 10 during its first year of availability. For those who have made the jump, it's time to see beyond the newly-improved Start menu, and get properly acquainted with the best Windows to date.

Text by *Michael Low, Azizul Rahman Ismail & Peter Chu*

Set up Windows Hello

Whether you're using a Microsoft account or a local account, chances are you'll be signing into Windows with an alphanumeric password. Along the way, there may be instances that necessitate a change in your password – be it for security reasons or other circumstances. What if we were to tell you that the days of memorizing complicated passwords are over? It's time to say "Hello" to Windows Hello.



With Windows Hello, signing in to your Windows 10 device is made easier, yet more secure. This is because it uses biometric authentication – detecting your face, iris, or fingerprint – to unlock your PC or tablet. As your presence is the password, this naturally requires the Windows Hello-capable devices to be equipped with specialized hardware, such as Intel's RealSense 3D camera, illuminated IR sensor, fingerprint reader, or other biometric sensors.

Once it picks up on your unique personal characteristics, Windows Hello will light up with a smile, greet you by name, and log you into Windows 10. To set up Windows Hello, go to Start > Settings > Accounts > Sign-in options.

Opt in to Windows Insider Program

Prior to its general availability in July, a preview release of Windows 10 was made available to tech enthusiasts and enterprise users since October last year to test and evaluate features as they were introduced through numerous OS builds. Under the Windows Insider Program, more than five million users – both Fast ring and Slow ring – provide invaluable feedback on what works (and what doesn't) to help shape the Windows 10 you see today.

Given that Windows 10 is the key to Microsoft's 'Windows as a Service' strategy – one that will continually evolve over time to deliver features and enhancements across a broad range of devices, it makes incredible sense that the Windows Insider Program will continue to serve preview builds post launch. For example, Build 10525, which arrived after the release of Windows 10, introduced the ability to personalize the Start menu, Taskbar, Action Center, and Title bars using more color options.

If you're interested to opt-in, all you have to do is sign up at insider.windows.com and check 'Get Insider builds' via Settings > Update & Security > Advanced options.

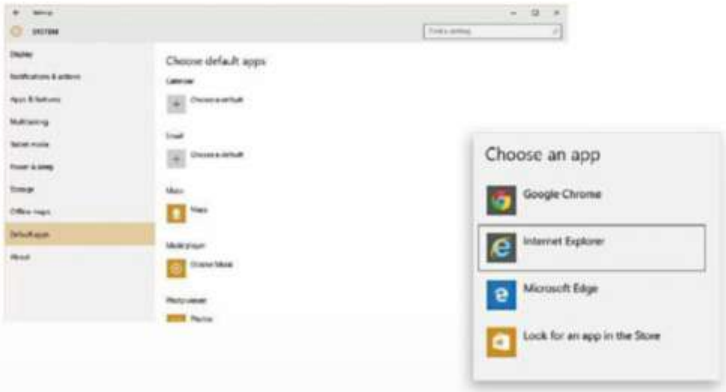
Choose your Default Apps

If you are upgrading from Windows 7 or Windows 8.1, Windows 10 has a habit of changing your default apps, especially your web browser, if you did not choose the 'custom' settings and explicitly change your default web browser during installation. To be fair, the pre-installed apps that come with Windows 10 are quite good. Once installed, the default apps for Windows 10 include Maps for viewing maps, Groove Music for music management, Photos to view images, Film & TV for video playback, and Microsoft Edge as the web browser.

However, if these default apps are not your thing, you have the option of changing them to your preferred applications. Buried within Windows 10 are settings for you to have it your way. To change your default apps, go to Start > Settings > System > Default apps.

Clicking the default app under each category will result in a pop-up list of installed app that Windows think is compatible, along with an option to search the Store for similar apps. There are also no pre-installed apps for Calendar and Email.

Don't like your own picks? Click the Reset button at the bottom of the window to revert the apps to Microsoft's recommended defaults.



Personalize the Action Center

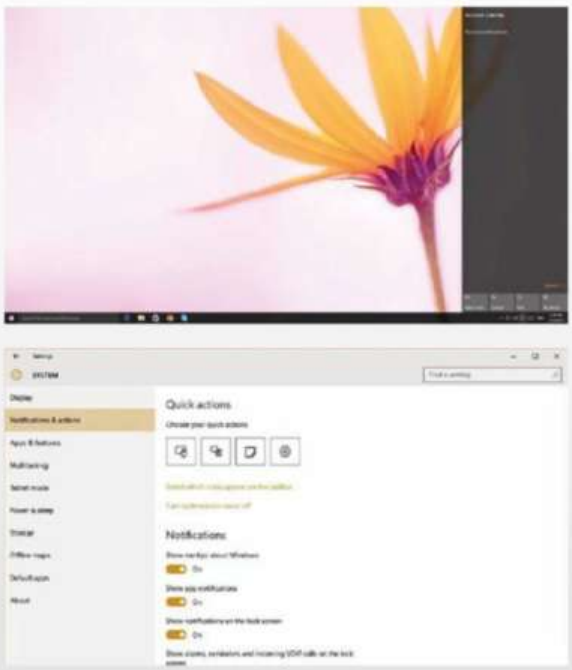
For those who appreciate speed and efficiency, Windows 10 offers the Action Center. Here, you will find your app notifications, as well as quick actions, which give you quick access to commonly-used settings and apps.

Basically, it is a feed for all Windows 10 app activities and a hub for incoming messages, and emails. By streamlining the Action Center, you will never miss a single thing

To customize it, go to Start > Settings > System > Notifications & actions. Here, you can pick the quick actions, types of notifications, and deny apps permission to push notifications to the Action Center.

Quick actions are especially useful for tablet and 2-in-1 devices as they make certain actions like switching between tablet and PC mode, connect to VPN, and connecting to wireless display much simpler.

The Windows 10 notifications can be customized to only show messaging and email alerts so that you will never miss an email or that important text message ever again. This can be done by turning off notifications from other types of apps.



Customize the File Explorer

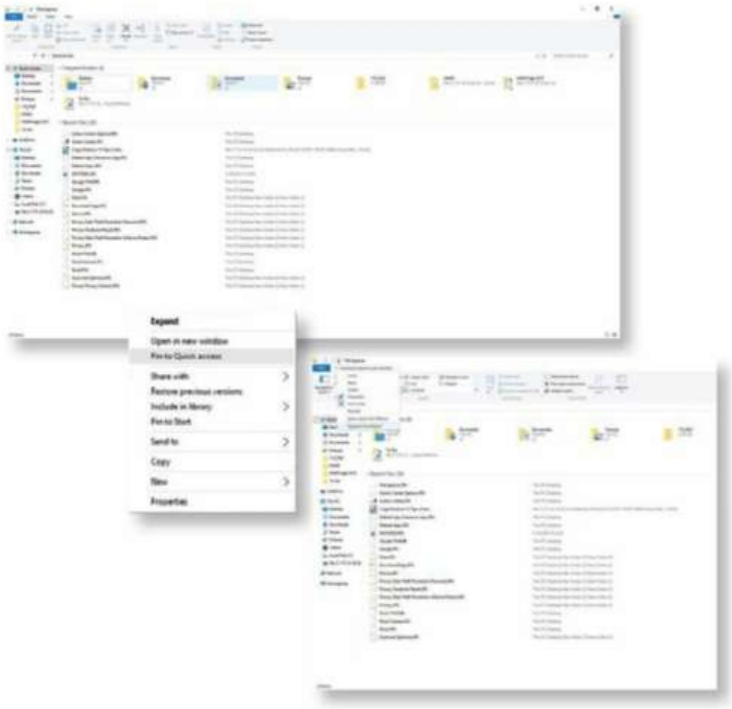
An aspect of Windows OS that has hardly changed throughout the many versions is the File Explorer. But that is not to say that there has not been any changes. In Windows 7 and Windows 8, File Explorer opens by default to the 'Computer' or 'This PC' view, respectively. In Windows 10, however, it opens, by default, to 'Quick Access'.

Quick Access provides easy access to any folder that is pinned to it, as well as the frequently used folders. This is very useful when working on a project where the frequently-accessed folders are immediately accessible.

A folder can be pinned to Quick Access by right-clicking the folder and selecting Pin to Quick Access.

Prefer the old way of doing things? Change the default by going to File Explorer > View > Options > and change the Open File Explorer in option in the General tab from Quick Access to This PC.

For more space in File Explorer, try hiding the ribbon by clicking the pull-down button next to the folder name up top and selecting Minimize the Ribbon. It won't be missed because most of its common functions can be emulated by using mouse clicks or keyboard shortcuts.



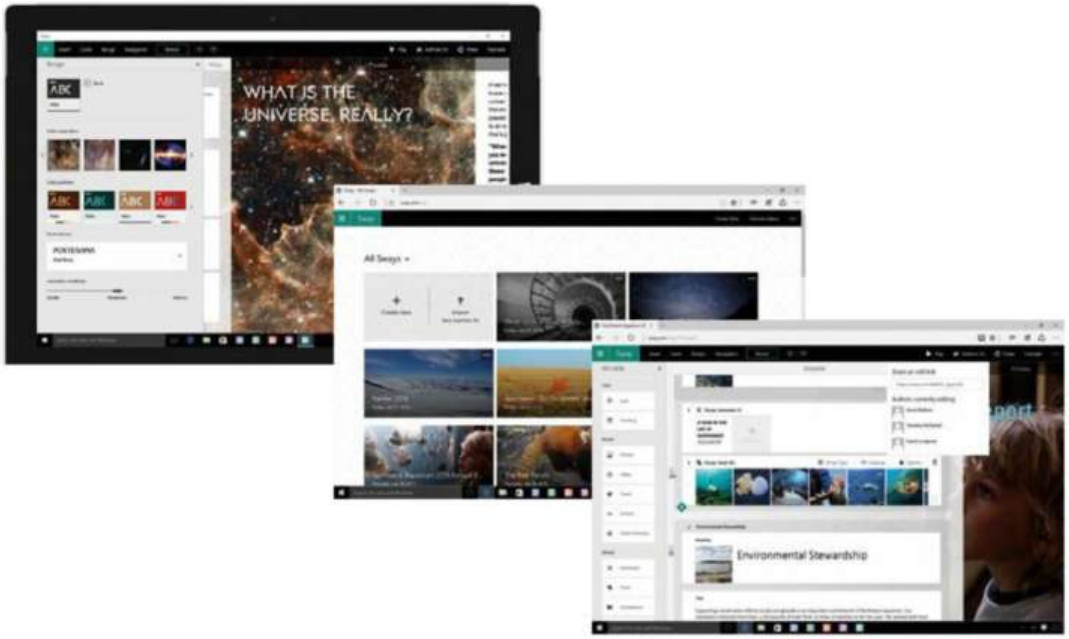
Do a Clean Install

Existing Windows 7 and Windows 8 devices can be upgraded to Windows 10 for free for a year (July 29, 2015 till July 29, 2016). The best way to perform a clean install is to upgrade to Windows 10 and ensure that the product key is activated, which is when your hardware configuration is registered with Microsoft's servers. Once Windows 10 is activated, you may proceed to do a clean install.

Back up all your data before going any further. Anything that is not backed up will be gone in a clean install. Begin by downloading the media creation tool from Microsoft. When prompted by the installer, select 'Create installation media for another PC' and make sure to choose the correct Windows 10 edition and architecture (32-bit or 64-bit). Next, restart the system and boot from the inserted USB drive or DVD media. Follow the onscreen installation steps, and Windows 10 will automatically activate itself upon detecting an active Internet connection.

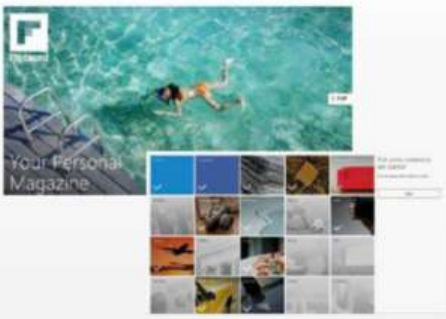
If at any time that you want to start over, the option to reset Windows 10 can be found at Start > Settings > Update & security > Recovery. Here, you can choose to reinstall Windows 10 while keeping your files; remove everything and reinstall Windows 10; or restore factory settings, which will reinstall the version of Windows that came with the device. Note that the latter option is not available on all PCs.

Essential Apps



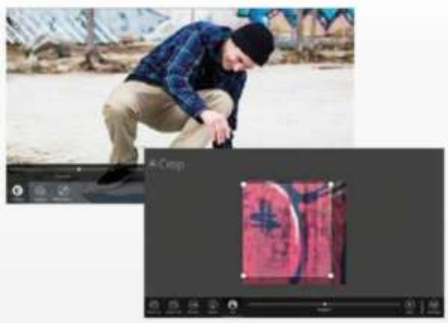
Sway

First unveiled in October last year, Sway, the newest addition to Microsoft's suite of Office productivity apps, is now available as a free app for Windows 10 devices. Sway is what Microsoft's calling a 'digital storytelling app', which users can use to create elegant presentations, interactive reports, lessons and projects with little to no effort. This feat is made possible by Sway's built-in design engine, which is able to intelligently organize the content of your project – whether it's images, text, or videos – and tastefully integrate them together into one final polished product.



Flipboard

There's no better way to keep yourself updated with the latest news stories than with Flipboard – the immensely popular news curation app that sports a welcoming, digital magazine-like user interface. Flipboard for Windows 10 works exactly like how it does on other platforms: you select the news categories that you're interested in – such as technology, photography, gaming or food – and Flipboard will automatically procure the latest articles from those categories for you.



Adobe Photoshop Express

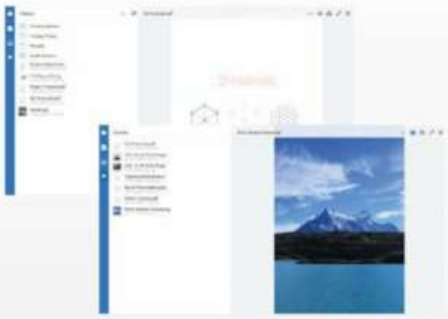
It's safe to say that Adobe Photoshop is one of the most recognized and comprehensive photo editing software on the market. But if you're finding the plethora of photo editing tools that are available in Photoshop to be a little of an overkill, you can always opt to download Adobe Photoshop Express instead, which only offers the essential tools you'll need to get your selfies ready for social media primetime.

Fresh Paint

Let the artist trapped inside of you roam free with the digital drawing app, Fresh Paint. The Fresh Paint app, which works best if your Windows 10 machine is equipped with a touchscreen, has all the necessary tools you'd need to create your pièce de résistance, including a variety of different paint brushes, oils, watercolors and acrylics. Fresh Paint also comes with two 'coloring book' activity packs, which you can use to hone your painting techniques.

Fitbit

Have you wanted to lose the excess flab in your tummy, but never had the motivation to do so? Well, with the Fitbit app for Windows 10, you might just be convinced to invest in a Fitbit device and whip yourself into shape, as it comes with fitness-based 'achievements' that you can strive to unlock, just like your favorite video games. What's more, the Fitbit app for Windows 10 has also undergone a complete overhaul to match the Windows 10 design language, and now supports core Windows 10 features, such as Cortana voice commands and Continuum.



Dropbox

It really doesn't matter if you're a student or a corporate executive – Dropbox is one of those apps that you won't be able to live a day without once you start using it. Dropbox is essentially a cloud-based storage service that allows you to store (or backup) all your photos, documents, videos, and more. The files you add to Dropbox will be readily accessible on all of your other devices as long as they have Dropbox installed.

Facebook

You probably don't need us to tell you this, but if there's one app that you definitely should have installed on your Windows 10 device, it would be the Facebook app. Why so? Because the app has been remade from the ground up to embody the flat, minimalist 'Metro' design language of recent Windows operating systems. Don't worry, the Facebook app for Windows 10 works exactly like how it does on other platforms – no learning curve required.

Twitter

Just like the Facebook app we mentioned earlier, the Twitter app for Windows 10 has likewise received a redesign to compliment the sleek looks and functionality of the Windows 10 OS – like displaying tweets on the Windows Live Tiles, as an example. It goes without saying that if you're any familiar with how Twitter works, odds are you'll be able to familiarize yourself with its Windows 10 app the very moment you boot it up.

A COMPLETE PACKAGE

Dell Inspiron 24 3000 Series All-in-One Desktop

The all-new Dell Inspiron 24 3000 Series All-in-One (AIO) desktops are designed for those who want a Windows 10 device that's easy to set up and ready to use the instant it gets out of the box. They are also for those who longed for a PC that takes up little-to-no precious desk space, and one that fits beautifully into wherever it's placed – thanks to its attractively thin design. As they offer a full-featured All-in-One experience, you can get to work quickly or connect with friends and family in the comfort of your own home.

Ready Once Out of the Box

Pop it out of the box, prop it up on the easel stand, plug in the power, and you're good to go. The newly-refreshed Inspiron 24 also comes with a color-matching keyboard and mouse, saving you the time of looking for one if you don't have any in hand, and ensuring that your finely curated décor is not ruined by a jarring mismatch of colors between your All-in-One desktop and its connected peripherals.

Family-Friendly Media Center

Built into the Inspiron 24 3000 desktops are a 23.8-inch Full HD wide-viewing angle display and stereo speakers tuned with Waves MaxxAudio software for an enjoyable gaming and movie viewing experience for the family. Also built into the Inspiron 24 is a widescreen HD webcam for the entire household to join in on Skype video calls. You can also go for the touch display option for a true interactive user experience, especially with the all-new Windows 10.

Connected in Every Way

Available in Glossy Back, the Inspiron 24 3000 desktops are also outfitted with connectivity options like 802.11ac Wi-Fi, Bluetooth 4.0, two USB 2.0 and USB 3.0 ports, a LAN port, a HDMI port, a 4-in-1 card reader, up to 1TB of storage space, and even an optional DVD-RW drive. As they come powered by the latest 6th generation Intel Core processors, the Inspiron 24 will provide a consistently smooth, lag-free performance to meet your everyday needs.

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Strong Competitive Edge

As the largest MMA organization in Asia, **ONE Championship** represents a commitment to elevate the various disciplines of martial arts, and to support the development of MMA talent across the region. The sport of MMA, which stands for Mixed Martial Arts, allows any athletes to employ the moves, techniques, and self-defense strategies from multiple martial arts in a one-on-one contact sport environment.

The Thrill of Competition

The exhilarating action, combined with the athleticism spirit exhibited in eSports and MMA tournaments, led to a partnership between **Alienware** and **ONE Championship**, coming together to surpass limits – both in the virtual battlefield and in the physical ring. Like MMA athletes, Alienware gaming notebooks are conditioned for extreme action with incredible mobility, while also configurable with high-performance Intel Core processors, NVIDIA GeForce graphics, and paired with the optional Alienware Graphics Amplifier for a desktop-class gaming experience.

Perfect Match

To celebrate this partnership, there will be a number of activities leading to the **ONE Championship's Tigers of Asia** at Stadium Putra on **October 9**, which include weekend tours at selected **Dell Exclusive Stores** in Kuala Lumpur, exclusive Meet the Fans session, Instagram photo contest with MMA fighters, **Alienware** product showcase, arm wrestling showdown, and more.

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EXTREME VERSATILITY

Acer Aspire R 11

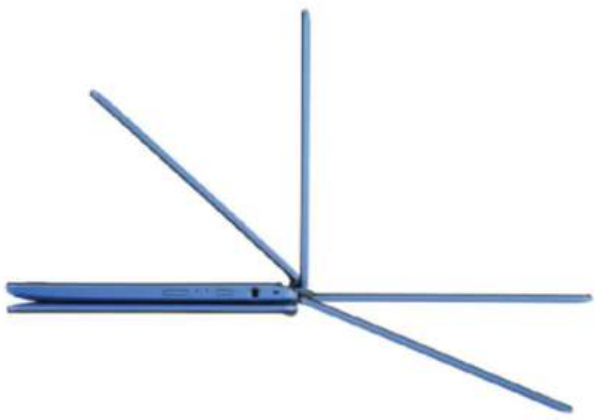
The Acer Aspire R 11 convertible notebook is the very definition of the word 'versatility', and we say so because its 11.6-inch display is able to rotate up to 360 degrees, effectively allowing the entire notebook to be propped up in four different configurations. If there was one thing else that the Aspire R 11 can proudly brag about, it would be the fact that it's the first device in Malaysia to be shipped with Windows 10 pre-installed.

Mechanical Contortionist

The defining feature of the 1.5kg Aspire R 11 is no doubt its ability to transform itself into four distinct modes: Laptop, Tablet, Tent, and Display – a feat that's made possible by its unique 360-degree dual torque hinge. You won't need to be worried about damaging the 11.6-inch HD (1,366 x 768) LED display of the Aspire R 11 while you're flipping it around, as it's made out of Corning's uber-tough Gorilla Glass 3. What's more, the display even comes with a special anti-fingerprint coating to help repel fingerprint smudges.

Sight for Sore Eyes

Unlike conventional displays which often tire out your eyes with just a few hours of use, you can be certain that the display of the Aspire R 11 won't be wearing your eyes out even if your work or entertainment vies for your undivided attention. And for that, you have Acer's proprietary BluelightShield technology to thank, as it helps to reduce the amount of harmful blue light rays that reach and strain your eyes.



The Sound of Music

Most notebook speakers are often only good for blurting out unbearably tinny sounds – but not the Aspire R 11 though, as its two built-in stereo speakers feature a paper diaphragm that's specially designed to deliver distortion-free and crystal-clear audio, as part of Acer's TrueHarmony audio technology. In fact, the superior audio quality of the Aspire R 11 is even worthy enough for it to earn a distinguished Skype certification. On top of that, its speakers are also intelligent enough to reverse its audio channel whenever the notebook is set up in Tent or Tablet mode.

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SMALLEST WINDOWS 10 FLIP

ASUS Transformer Book Flip TP200SA

Built to take advantage of the clean and sleek Windows 10, the ASUS Transformer Book Flip TP200SA is an 11.6-inch convertible Windows 10 device that's incredibly portable (at 18.45mm thin), lightweight (at 1.2kg) and built tough – thanks to its stylish, scratch-resistant metallic finish. Featuring an innovative 360° hinge for four highly-flexible usage modes, the TP200SA can be enjoyed in a variety of ways to suit the occasion. It's also powered by the latest Intel processors, so expect powerful performance and long battery life.

As Flexible as You

Today, many of us need to be in 10 places at the same time, so it's understandable that you need a device that's as flexible as you. The Transformer Book Flip TP200SA can be used in four different ways. There's the traditional notebook form, for some serious work; the tent and stand form, for when you want to watch movies; and the tablet form, for when you need to move around.

Future-Ready

To help you stay productive even when you're on the move, the TP200SA offers Intel Pentium and Celeron processor options, giving you up to eight hours of battery life – more than enough for a day's work. Additionally, it's the first Windows-based Flip to be equipped with a reversible USB 3.1 Type-C port, which future-proofs the TP200SA for future peripherals.

Do Great Things

As the TP200SA features an 11.6-inch IPS HD (1,366 x 768) touch display, it's designed from the get-go for Windows 10, which is why it's pre-loaded with Microsoft's new OS. With Windows 10, you can get things done faster, and thanks to Continuum support, the transition from one mode to the other is made seamless. In addition, the TP200SA also comes with Microsoft Office 365 pre-installed, with 1TB of space on OneDrive, and 500GB on ASUS WebStorage.

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Fitness is My Witness

Getting yourself into tip-top shape these days couldn't be any easier and more rewarding, now that we have the technology to give us a much needed coaxing. One such piece of technology is Garmin's Forerunner 225, a GPS running watch that's not only able to accurately track your running metrics, but is also able to monitor your heart rate along with it, thanks to its built-in monitor. Pair it up with an action camera such as the GoPro HERO4 Session, and chances are you'll be more than willing to go for a run off the beaten track, just so you can record your escapades for the entire world to see.

5 Most Important Features of a Fitness Tracker

1 Water Resistance

You wouldn't want your rigorous fitness routines to be brought to an abrupt halt just because of a little drizzle now, would you? So, the higher the water resistance rating your fitness tracker has, the less you'll have to worry about one of nature's elements ruining your stride.

2 Polished Companion App

Suffice to say, a good fitness tracker is also one that comes with an accompanying mobile app. Not just any obligatory or token app though, but one that features a user-friendly interface, detailed insights on your fitness activities, and most importantly, is able to work without a hitch.

3 Heart-Rate Monitoring

If you take your fitness metrics very seriously, it would probably be best for you to invest in a fitness tracker that has a heart rate monitor – regardless of whether it's built into the tracker itself, or available as a separate accessory. The presence of a heart rate monitor also meant that it can calculate certain fitness metrics – such as the amount of calories you've burnt – more precisely.

4 Push Notifications

The proverb of 'all work and no play makes Jack a dull boy' is one that's equally relevant to fitness trackers. There's absolutely no fun in having a dictator of a fitness tracker that's more concerned about whipping you into shape, than keeping you updated with your social life. Besides, your fitness tracker would be tremendously more versatile and practical if it could display your phone's notifications.

5 Long-Lasting Battery Life

With regards to the battery life of fitness trackers, a good rule of thumb is that you shouldn't need to charge it more than once a week with moderate use. Anything more than that, and it will feel like a chore – and we're sure you don't need any more of that in your life. The good news is, most fitness trackers these days are able to last for at least a week before needing a recharge.

6 Tips to Make Your POV Videos Stand Out

So, you've got yourself a GoPro HERO4 Session. With that, we're guessing that you have every intention of using it to its fullest potential, and that means you're going to attempt all sorts of stunts. What's that? You're not sure how to get that sweet shot with your action camera? Well then, why didn't you say so? In that case, here are just some of the ways you can put that action camera to good use.

1 Strap It On

Want to give your video that sense of excitement in first-person? Use the appropriate headstrap accessory that is compatible with the action camera, and strap it to your head. Playing an intensive sport, such as paintball? No matter, as you can also attach the camera directly to the body of your paintball gun, which also lets you review just how trigger-happy you were during the game.

2 Different Sports, Different Mounts

Naturally, it goes without saying that depending on the sportsperson that you are, there are different mounts that are designed to accommodate your action camera. Just like the headstrap was designed to wrap over your head, there are also other mounting accessories, such as a helmet mount, a glove mount, and even miniature tripod and extendable camera arm.

3 Know Your Field of Vision

Let's be honest: even with the HERO4 Session's 8MP wide-angle lens, you may not be able to capture the view you're aiming for without practice. Therefore, it's important for you to plan out your shots before you commit to your action. That usually means that you'll need to scout an area and then planting the HERO4 Session at the exact angle you wish to record your death-defying feat.

4 Determine the Video Quality

Not every video needs to be taken in 1440p resolution, and not every great stunt has to be captured in the now standard 720p HD resolution. Determine which stunt calls for the HERO4 Session's WQHD video format, as well as which stunt can easily be interpreted via a Full HD or HD recording format. Remember: as long as your action camera can capture all the details, you're good to go.

5 Video or Stills, Your Choice

Besides video recording, you can also use the HERO4 Session to take photos, or even time-lapse shots. Thanks to its 8MP camera, you're guaranteed some really high-quality shots. Want a close-up shot of subject? Then simply press the red button at the top of the camera. Looking for a more severe angle? Simply pair the HERO4 Session to the provided GoPro Remote, or to your smartphone via the GoPro app.

6 Whole New Level of Durability

If you're an owner of the HERO4 Session, then you're probably wondering if it comes with special housing for both high-impact and water-based sports. The answer is a simple no. As the HERO4 Session is built in a pneumatically-sealed chamber, the camera itself is already sealed tightly and plunged into water, all without the need of usual waterproof housing that other GoPro models may need.

RUNNER'S HIGH

Garmin Forerunner 225

The **Garmin Forerunner 225** is a GPS running watch that's made specifically for runners who can't live without knowing their running metrics, right down to the very last detail. Unlike most conventional fitness watches that often times require additional accessories, the **Forerunner 225** comes complete with its own built-in heart rate monitor and accelerometer out of the box. And that means you can spend less time hunting for accessories, and more time digesting the abundance of running metrics that the **Forerunner 225** has to offer.

LISTENING TO YOUR HEART

The star of the **Forerunner 225** is most definitely its integrated, wrist-based optical heart rate monitor – the first of its kind from Garmin. It's not just any ordinary heart rate monitor though, but one that has been developed by award-winning Canadian fitness company, Mio. So you can rest easy knowing that the heart rate monitor is going to be as reliable as they come. The watch even comes with a light seal on its back to prevent ambient light from affecting its accuracy.

ALL-DAY FITNESS TRACKING

You won't have to worry about the **Forerunner 225** giving up on you midway through your intensive fitness routines, as its battery is able to last for up to four weeks in watch mode with activity tracking, and a good seven to 10 hours with the GPS and heart rate monitor constantly active. You don't necessarily have to stop running just because a torrential downpour is happening outside either, as the built-in accelerometer keeps track of your indoor treadmill runs as well.

24/7 METRIC MONITORING

When the **Forerunner 225** isn't keeping a close eye on your running activities, it will automatically divert its attention to monitor your other fitness metrics instead, which include the amount of steps you take every day, the distance you've walked, the amount of calories burned, and the quality of your sleep. What's more, if you have been sitting down for more than an hour, the watch will vibrate on its own to coax you to get up and stretch those leg muscles.

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GoPro
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GoPro HERO4 Session

GoPro – It's a name that you'll associate with death-defying stunts and unbelievable feats, performed by daredevils and stuntmen who record their acts using GoPro's line of action cameras. Recently, the company's HERO4 action camera lineup received a newly designed camera: the **GoPro HERO4 Session**. Designed to be more compact and versatile than its predecessors, the **HERO4 Session** comes with all the standard offerings of a GoPro camera, and more.

A Different Form of Compact

Weighing a mere 74g and both visually and physically smaller than the HERO4 Black and Silver flagships, the **HERO4 Session**'s sleek and machine-cut cubic design is a far cry from the standard GoPro HERO designs. Inspired by what they have created, GoPro was also able to create a whole new range of accessories for the **HERO4 Session**, such as the glove attachment, which allows you to mount the HERO4 Session directly on to your hand; a feat that none of the previous GoPro action cameras could do.

Sealed with a Promise

The cubic design of the **HERO4 Session** is the first of its kind for GoPro. Built in a pneumatically-sealed factory, its camera design is uniquely built inside the chassis, and not designed to jut out from it like the HERO4 Black and Silver editions. Because of the nature of its construction, the **HERO4 Session** is extremely durable and waterproof without the need for the usual waterproofing and shock-protection accessories.

Between Movie and Real Life

While it may not record in 4K resolution, the **HERO4 Session** is nevertheless capable of recording video at a maximum resolution of 1440p/30, and at a wide angle mode to boot. You can also use the GoPro Remote, courtesy of the GoPro app on your phone (available as a free download from Google Play or Apple App Store), to lower the resolution down to either 1080p/60 for a smoother video experience, or WVGA at 120 fps if you're simply looking to conserve space on your microSD card.

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Video	Photo
4K30 / 1080p120 fps	12MP / 30 fps Burst

Wireless	Waterproof
Control. View. Share.	131' (40m)

HERO4 SILVER

Pro-quality capture.
Touch-display covenience.

BUILT-IN TOUCH DISPLAY
Frame your shots. Easily adjust settings. Play back videos and photos.

PROFESSIONAL VIDEO QUALITY
Stunning 4K15, 2.7K30, 1440p48, 1080p60, 960p100 and 720p120 video.

Video	Photo
4K15 fps / 1080p60 fps	12MP / 30 fps Burst

Wireless	Waterproof
Control. View. Share.	131' (40m)

HERO4 session

SO SMALL. SO STOKED.
Smaller and lighter.

COMPACT DESIGN AND WEIGHT
HERO4 Session is 35% smaller and 40% lighter than other HERO4 cameras.

DYNAMICALLY SWITCHES
Microphones for reduced wind noise & enhanced audio in high-speed or windy environments.

Video	Photo
1440p30 / 1080p60 / 720p108 fps	8MP / 10 fps Burst

Wireless	Waterproof
Control. View. Share.	33' (10m)

KEY HERO4 CAMERA FEATURES

BUILT-IN WI-FI + BLUETOOTH*
Enhanced connectivity to the GoPro App, Smart Remote (sold separately) and more.*

PROTUNE™
NOW FOR PHOTO + VIDEO
Cinema-quality capture and manual control of Color, ISO Limit, Exposure and more.

NIGHT PHOTO + NIGHT LAPSE
Customizable exposure settings up to 30 seconds for single and Time Lapse photos.

SUPERVIEW™
Captures the world's most immersive wide-angle field of view.

HILIGHT TAG
Tag video highlights while recording for easy playback, editing and sharing.

QUIKCAPTURE
Power on and record automatically with the press of a single button.

PROFESSIONAL AUDIO PERFORMANCE
Powerful new audio system captures clean, high fidelity sound with nearly 2x the dynamic range.*

AUTO LOW LIGHT
Automatically adjusts frame rates for optimal low-light performance.

*Compared to the HERO3+ Black Edition.

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FEATURE

A JOURNEY THROUGH TIME

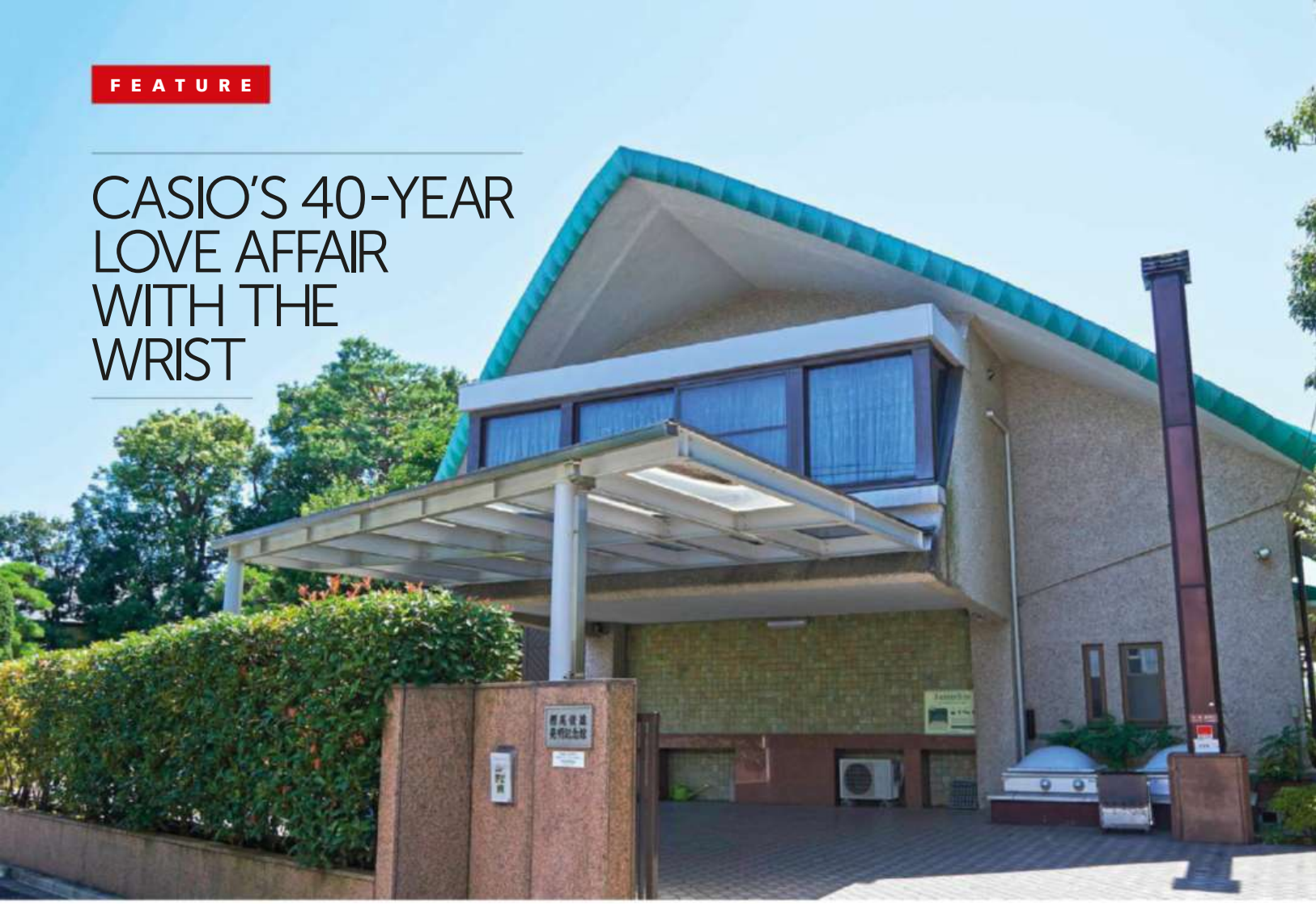
In 1974, Casio introduced its very first digital wristwatch, the CASIOTRON. It featured CMOS LSI technology developed from its successful electronic calculators, to provide automatic calendar functionality. As a computerized feature, you could technically call the CASIOTRON a "smart" watch. For the next 30 years, Casio would develop dozens of multifunctional digital watches that can all be considered the true forefathers of the modern smartwatch.

Text by *Zachary Chan*

PICTURE CASIO

FEATURE

CASIO'S 40-YEAR LOVE AFFAIR WITH THE WRIST



From Smart Watch

To fully appreciate the rich, colorful and often quirky inventions that Casio cooked up over the years, HWM visited the Toshio Kashio Memorial Museum of Invention in Tokyo, Japan. This is essentially the actual mansion of Casio's inventor-founder converted into a museum showcasing his achievements from the 14-A, the world's first compact all-electric calculator that started it all to the watches and musical instruments that Casio is known for today.

You see, Casio's love of the wrist wasn't about artisan craftsmanship, status symbols or high society, at least not in the way of the Swiss. Casio's digital endeavors were a measure of Japanese ingenuity. Casio has always believed that the wrist is the best place to wear an information device, and time is merely another piece of information. So when the company embarked on a journey to develop digital watches, they didn't just display time and date, but a host of other data too.

These watches were designed for the masses, to cater to the needs of business, travel, sports and even leisure. If you are a 70s or 80s child, you most probably have owned a Casio calculator watch. If you're not, perhaps your parents still have one, tucked away somewhere. While Casio wasn't the first company to produce a calculator watch, they improved upon it with the CD-40, which included built-in memory to store phone numbers. This would spawn the highly popular Databank series of watches that soon would feature more functions from timetables to autodialing, multi-language displays and even a dictionary, essentially akin to having a PDA on your wrist.

Outside the successful Databank series, Casio produced dozens of other multifunction watches which, while lesser known, were all ahead of their time. Think of any feature that's been touted by a modern wearable or smartwatch—yes, even the Apple Watch—and we would probably be able to find a model in Casio's archives that already had that functionality 10-, 20-, even 30-years ago. Go on, try us.

> "Casio's love of the wrist wasn't about artisan craftsmanship, status symbols or high society, at least not in the way of the Swiss. Casio's digital endeavors were a measure of Japanese ingenuity."

Before fitness trackers, Casio had watches with a pedometer (JC-11), pulse rate (JP-100), blood pressure (BP-100) and calorie counter (FBR-10W); before Apple Pay, Casio experimented with a digital wallet function on a watch (GWS-900); before Google Maps, Casio had a map charting watch you physically roll along an actual map to find the distance between two points (MAP-100). Want something quirkier? Before the advent of apps, Casio had a special digital compass watch (CPW-100) called the prayer compass for Islamic travelers to determine Qibla direction and daily prayer times. They even had a watch that could aid in performing magic tricks (MGC-10).

In 1999, the Casio PRT-1 was the world's first watch with a built-in GPS sensor. In 2000, Casio produced two more world's firsts, the WMP-1V MP3 watch and the WQV-1 camera watch.

To Smartwatch

So, if Casio has been such a great innovator in the space of digital watches, just what happened to them? Why have they not ridden in and led the way on the whole wearable phenomenon on a shining white horse? How is Casio only known today for their G-Shocks?

Somewhere towards the late 1990s, there was a massive boom

PICTURES CASIO

for the G-Shock line, while sales of multifunctional digital watches stagnated. Try as they may, Casio couldn't get past a 70 billion Yen sales wall, while G-Shocks became their prime seller. In fact, Casio reached an all-time high for its watch business in the 2014 financial year with 153 billion Yen in sales, with a projection to hit 200 billion Yen sales by 2018 largely due to G-Shocks.

According to Yuichi Masuda, Senior Executive Managing Officer and Timepiece Division Manager, Casio's strategy shift around 2004 from digital multifunction to analog was due to the increasing need and complexity of adding new functions into their digital watches, which made operations complicated. The limits of technology also had a detrimental effect on product design: basically, watches got ugly real fast.

"Casio reached their highest sales ever for its watch business in the 2014 financial year at 153 billion Yen, with a projection to hit 200 billion Yen sales by 2018 largely due to G-Shocks."

The boom in G-Shocks allowed Casio to focus on what they now term as Intelligent Analog design, where analog watches inherit digital technologies with the aim of improving functionality rather than just adding unnecessary features. From Triple Sensor to GPS Hybrid Wave Ceptor and Tough Solar technologies, the lessons from this intelligent analog design that Casio has perfected from their shift over the last decade are miniaturization and energy efficiency.

The CASIOTRON digital computerized watch that started it all in 1974.

The Casio Databank Telememo CD-40 could store your phonebook in your wrist. It sold 6 million units in five years since its launch in 1984.

PICTURES **CASIO**

And yet, in an interview with The Wall Street Journal in July, new company President Kazuhiro Kashio let it slip that Casio is once again looking towards digital and are actually developing a smartwatch.

Of course, Casio's entry should be no surprise as the wearables market shows no sign of abating. Our little trip to Japan and this history lesson in digital watch design would also have little impact if there was no follow up. Even the Swiss are entering the fray, so for Casio to remain silent would be a folly indeed.

"New company President Kazuhiro Kashio let it slip that Casio is once again looking towards digital and are actually developing a smartwatch."

Whether it will take form in the digital roots of Casio's past or the intelligent analog of present day G-Shocks remain to be seen, but after extensively using just about every major smartwatch since the Pebble to the Apple Watch, I have realized that no one has yet to get the formula right.

Are we excited for the prospect of a new Casio smartwatch? We'd be lying if we say we weren't. If there is any company that can claim to have the chops to make the smartwatch concept work, Casio will be at the very top of the list.

My personal requirement for what I'd consider an entry into the smartwatch market is that it has to be a watch first, with customizable notification functionality, and fully powered via solar. Sounds simple enough? Then why hasn't anyone made it yet? Well, here's looking at you, Casio. HWM

The WQV-1 launched in 2000 was the world's first watch with a built-in camera. Its successors, the WQV-3 and WQV-10 could shoot in color.

The first G-Shock watch, DW-5000C, was released in 1983. By late 1990s, G-Shocks would overshadow all other Casio multifunction watches.

PICTURES CASIO

TEST

LAB RESULTS

Every month behind the doors of our super secret gadget testing facility, the latest tech products are put through their paces using industry-recognized benchmarks and our own blend of real-world usage scenarios. Here are our findings.

MORE INSIDE>

ACER XR341CK
QHD FreeSync goodness.

BENQ XR3501
Thrill of the curve.

PHILIPS HTL7140B
Compact surround.

OPPO PM-3 & HA-2
Perfect combination.

HOW WE RATE:

Products are rated on a scale of **1** to **10**; **1** being so abysmal, it should be a crime to sell it, and **10** being almost perfect. Come now, nothing is perfect. An Editor's Choice may also be awarded based on unique merits.

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TEST BEST VALUE HWM MALAYSIA

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LORD OF THE PASSWORDS

The strongest passwords are those that are unpredictable and random. But, have you ever made them so complicated that they become hard to remember? The solution, use a password manager. Here are four of the most popular password managers around. Find out which is the most secure and easiest to use.

Text by *Kenny Yeo*
Photography by *Jasper Yu*
Art Direction by *Ian Chong*

1PASSWORD

1Password is one of the more established password managers around with a ton of useful features including a password generator, auto-login and auto-fill functionality. It also saves your credit card details and allows users to create password-protected notes. In fact, 1Password is unique in that it allows users to save lots of other information including bank account numbers and details, driver license details, and even your router login information.

Installing and setting up 1Password was a breeze and requires users to download the app and then install the appropriate extension for their browser. This is pretty much the standard installation and setup procedure for all password managers, so no surprises there. Once you launch 1Password, it will prompt you for a master password. This master password is not stored on 1Password, so if you forget it you are in big trouble. Fortunately, unlike its competitors 1Password encourages users to enter a password hint, but this is a double-edged sword. On one hand, it can save you the agony of losing access to all your passwords, but if your password hint is too obvious, it may allow others to guess your master password.

1Password's is easy to use and navigate, but it isn't the most attractive. For OS X users, there's an additional 1Password Mini interface that appears as a small icon on your menu bar. This lets users quickly generate passwords and login to their saved accounts. Windows users fear not, because this same functionality is available when you install the 1Password extension for your web browser.

However, unlike Dashlane, 1Password's auto-login feature is not as hands off. To be exact, 1Password's auto-login feature only works if you select the site you want to login from the app itself, either through the main application interface or the 1Password Mini interface. It's not a deal breaker by any means, but it is less intuitive and convenient.

Easy to use and provide analysis of all your passwords.

Not free to use. Some features not very intuitive.

One of the most helpful features in 1Password is "Security Audit", which highlights weak passwords, duplicate passwords and also highlights which passwords are old. This allows you to quickly identify which accounts and passwords then you need to change.

Like its rivals, 1Password also has apps for iOS and Android and it integrates well with them, allowing users to access their passwords and details on their mobile devices. Passwords and details can be synced across all devices and 1Password gives users the flexibility to choose the method that they want to use - over iCloud or Dropbox. 1Password recently introduced a new option through Wi-Fi, so password data never leaves a user's network. Passwords are synced across multiple devices using an encrypted keychain file developed specially by 1Password.

Finally, it's worth noting that unlike some of its rivals, 1Password is only available as a paid application. There's a free one-month trial, after which you'll need to purchase a license.

AT A GLANCE

OS Compatibility
Windows, OS X, Android, iOS

Browser Compatibility
Chrome, Firefox, Safari, Opera

Price
US$49.99

As you create new accounts, 1Password will prompt you to save login details and passwords.

The 1Password Mini interface lets you quickly access key features of 1Password.

1Password lets you choose how you want to sync your passwords with other devices.

DASHLANE

Compared to the other password managers, Dashlane is practically a greenhorn. Released only in October 2012, it has made significant strides to become one of the more popular password managers in the market today. One of the reasons why it is so successful is because of its user-friendly interface.

Dashlane has all of the common features found on any respectable password manager, including a password generator, auto-login functionality, auto-fill of forms, password-protected notes, and is also able to save your credit card information and even generate receipts for your online purchases.

Setup was a fuss-free process, requiring users only to install the application on their systems and then the appropriate extensions for their web browsers. Following which you need to create a Dashlane account and a master password. Like other password managers, Dashlane does not save your master password on a server, instead your passwords are saved locally on the device and the master password is used as a key to access Dashlane to decrypt data and gain access to your saved passwords. The only time your passwords are sent to Dashlane's servers is if you choose to sync them across multiple devices, but even when doing so, this data is sent across Dashlane's servers in AES-256 encrypted form.

However, an important thing to note is since the master password is not stored on Dashlane's servers, there is no way for you to access Dashlane and all your saved passwords if you should forget the master password. Dashlane does not give you the option of entering password hints either. Hence, of all the password managers, Dashlane's structure and method of handling your data is arguably the safest and most secure. For added protection, you can even enable two-factor authentication through Google Authenticator.

Dashlane is also one of the easiest to use password managers. By default, it will offer to save your passwords as you log into your various online accounts or if you are creating new ones. The password generator also offers a couple of options. You can opt for numbers or letters only or both, add symbols, and as it generates passwords, it even gives a score of how strong they are. Other things we like is that fields that can be automatically filled up by Dashlane are highlighted with the Dashlane icon for easy identification, and that Dashlane automatically logs you into a website even if you manually enter the URL in your browser's address bar.

There's also the nifty Security Dashboard that shows all your accounts and generates a security score to give you an idea about how secure your accounts are, and also warns you if they are old or if they have been compromised. Most impressive is how Dashlane can help you change your password at a single click. Unfortunately, this feature only works for around 50 selected sites at the moment, but Dashlane does have plans to expand this list.

Dashlane is free to use, but it offers a premium version with more features such as account backup, syncing of passwords, web access to passwords and more for a yearly fee.

Most intuitive interface. Very secure system.

Free version has no backups. Could potentially lose all your passwords.

AT A GLANCE

OS Compatibility
Windows, OS X, Android, iOS

Browser Compatibility
Chrome, Firefox, Safari, Internet Explorer

Price
Free, Premium at US$39.99/year

The Security Dashboard lets you check on your passwords in a quick glance.

Dashlane will automatically log you into websites if you have previously saved its login details.

You can save credit card details for easy online shopping.

LASTPASS

LastPass is a popular choice and it arguably offers the best compatibility across operating systems and browsers. It works with Windows, OS X and even Linux. For mobile devices, it works with iOS, Android and also Windows Phone and BlackBerry. And as for browsers, LastPass provides integration with Chrome, Safari, Firefox, Opera and Internet Explorer.

And as you would expect, LastPass comes with all the features that a respectable password manager would have including a password generator, auto-login functionality, auto-fill of forms, password-protected notes, and is also able to save your credit card details and more.

Installation and setup was a breeze. Like its competitors, LastPass requires you to download an extension for proper integration with your browser. After this, users can proceed to create an account and a master password. Like the other password managers, the master password is not stored on LastPass' servers and is used only to gain access and decrypt the data that is stored locally on your device. This means that even if LastPass was hacked, they would not gain access to your master password, a point we'll come back to later.

Unlike its competitors, LastPass exists only in your browser as an extension and does not appear as a typical standalone application. Nevertheless, the interface is clear and easy to navigate and use. After installation, LastPass will also attempt to copy passwords stored in your browser, which will help you get up to speed more quickly and is a feature missing in other password managers.

As you browse the web, LastPass will prompt you to save passwords and fill up forms. And as you populate your passwords and details into LastPass, fields that can be automatically filled up by LastPass will show an icon by its side, making it easy to identify and use.

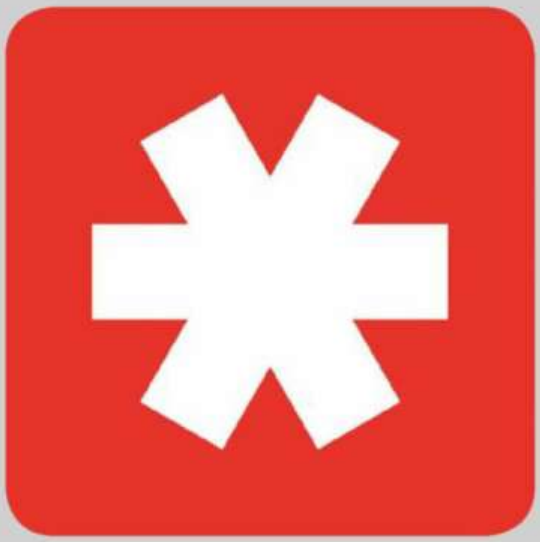
One particular nifty tool is the LastPass Security Challenge. It scans through all your saved passwords and warns you if there are any weak or duplicate passwords, it also tells you how old your passwords are and prompts you to change them. Finally, it generates a safety score to tell you just how safe your accounts and passwords are.

Free version does not miss out on much features.

Huge popularity makes it a target by hackers.

Similar to Dashlane, LastPass is free to use, but it also offers a premium plan for users who want more features for an affordable US$12 a year. If you need access to your passwords primarily on desktop systems, the free version of LastPass should suffice, as it syncs your passwords across multiple devices (but not on mobile). Subscribing removes advertisements, enables priority support, and most importantly, allows you to access your passwords on mobile devices.

Unfortunately, it is worth noting that LastPass itself was recently subjected to hacking. Although encrypted user data and stored passwords was not stolen, the hackers did make away with email addresses, password reminders and authentication hashes, LastPass did issue a warning to all their users to change their master passwords just in case.



AT A GLANCE

OS Compatibility
Windows, OS X, Linux, Android, iOS, Windows Phone, BlackBerry

Browser Compatibility
Chrome, Firefox, Safari, Opera, Internet Explorer

Price
Free, Premium at US$12/year

LastPass can import your saved login details from your web browsers.

The Security Challenge is a good way to find out just how safe your accounts are.

LastPass can also save details of your driver licenses and even club memberships.

ROBOFORM

RoboForm is one of the oldest password managers, having been around in some form since 1999. It works with all major desktop and mobile operating systems and integrates via an extension with all the popular web browsers.

Like its competitors, RoboForm comes with all the features you would expect to find on a password manager including auto-login functionality, auto-fill of forms, password-protected notes, the ability to save other important bits of information like credit card numbers, passport details and more.

Setup was a straightforward affair and after installation, users can choose from two modes of RoboForm - RoboForm Everywhere and RoboForm Desktop. As you might have guessed, RoboForm Everywhere syncs your passwords and lets you access your passwords from anywhere across multiple devices. On the other hand, RoboForm Desktop saves all your passwords on your desktop only. The former is certainly more convenient if you want to access your accounts on multiple devices, but it does pose some risks. The latter is more secure, but trying to access services on other devices would be a pain, especially with passwords generated by RoboForm.

While installing RoboForm, it will also prompt you to install extensions on your browser. However, the way extensions are implemented across the various browsers is inconsistent. For example, RoboForm must exist in the form of a toolbar on Safari to work, which takes up valuable real estate, whereas RoboForm in Chrome is just a small icon on the toolbar. For Safari users, the RoboForm toolbar is a necessary evil as it allows quick access to RoboForm's various features, allowing you to quickly login to your saved accounts and also generate passwords for account creation, and also prompts you to save account details whenever you create new ones.

RoboForm's auto-login feature works in the same way as 1Password's, which is to say that it isn't as intuitive as we would like it to be. It works only when you select the site or service that you want to login from the app or extension itself, unlike Dashlane which takes care of everything automatically. Also, we noticed that RoboForm sometimes has problems saving the exact URL of the login page, which meant we had to manually cut and paste our username and passwords from RoboForm to complete the login process.

Easy setup and free to use for 10 logins.

Missing more advanced key features like 2FA.

Unfortunately, RoboForm is missing out on some important features that we found useful in its rivals. For example, RoboForm does not provide an analysis of how safe or strong your passwords are, much less warn you that a service you are using is being compromised. Another feature missing is two-factor authentication, which would provide an additional level of security and peace of mind.

RoboForm is available for free, but the free version only saves up to 10 logins. This would probably not be enough for most users. The paid version of RoboForm Everywhere costs US$19.95 per year, whereas RoboForm Desktop for Windows and Mac OS X is available for US$29.95 per device.

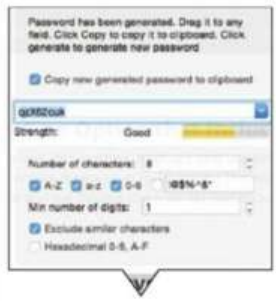
AT A GLANCE

OS Compatibility
Windows, OS X, Android, iOS

Browser Compatibility
Chrome, Firefox, Safari, Opera, Internet Explorer

Price
Free, US$19.95/year, US$29.95 for RoboForm Desktop

RoboForm Everywhere lets you access your saved details across multiple devices.



If you are using Safari, you can access RoboForm's password generator from the RoboForm toolbar.

On Macs, RoboForm can be accessed from the menu bar to gain quick access to accounts.

HOW DOES A PASSWORD MANAGER KEEP YOU SAFE

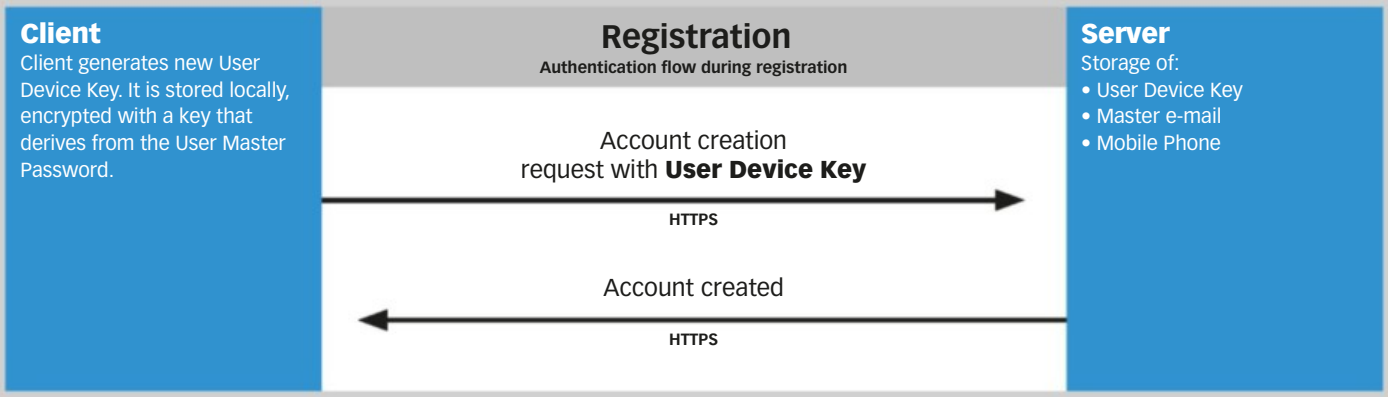
The idea of a password manager is simple. It saves all your passwords in a nifty app and helps you remember them so that you don't have to. To access these passwords, all users need to do is remember a single master password.
It is literally the concept of one password to rule them all.

However, the interesting thing is that the master password is never actually sent online to access your data. Instead, it acts as a key that gains you access into the password manager and your passwords. And for most password managers, the passwords that are saved within them are stored locally on the device in a heavily encrypted form using 256-bit AES encryption with PBKDF2 iterations. According to Dashlane's security whitepaper, a file with 256-bit AES encryption and PBKDF2 with 10,000 iterations would take a single quad-core Intel Xeon processor running at 1.87GHz over 1,700 years to decipher.

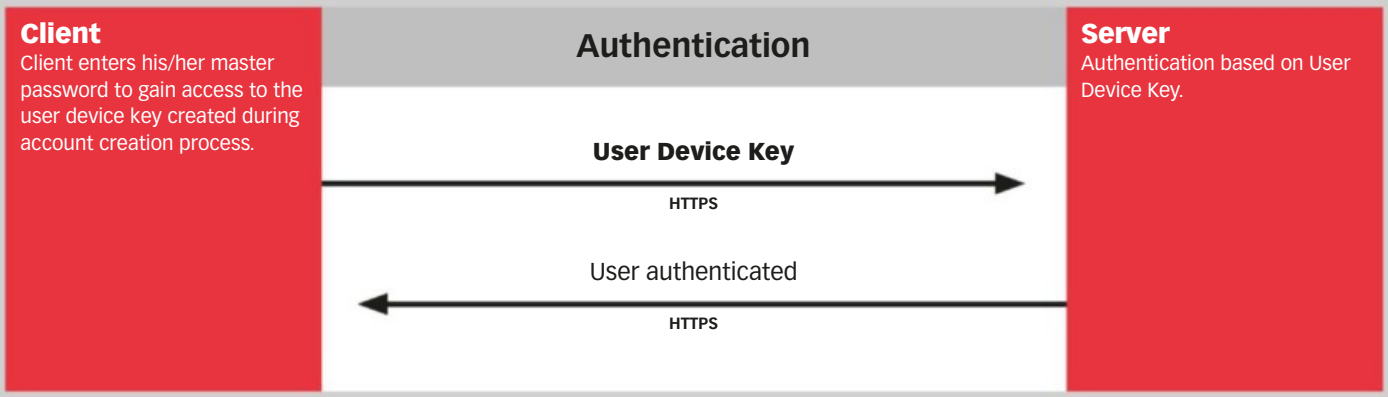
In other words, it is very difficult to hack into a user's account. Not only would the hacker need to physically steal your device, he or she would also need to know your master password. As a result, this is why some password managers, like Dashlane for example, do not even provide the option of giving users password hints, as that could jeopardize the entire system.

Furthermore, most password managers also carry out authentication based on devices. What this means is that only previously authorized devices can have access to passwords. For most password managers, it works like this: whenever a new device is added, a user device key is created which is stored locally on the device and also encrypted; only after the master password is successfully entered, is this device key then used to authenticate the login. This prevents hackers from using unauthorized devices to access the account.

That said, password managers are not foolproof. For example, the master password is the key and the entire system can be compromised by using a master password that is easy to crack. Also, if you happen to write your master password down some place, be sure to keep it in a safe place. Finally, if the computer has been physically compromised, by a keylogger for example, which captures keystrokes, then no password-based security system will be able to keep your data safe.



The User Master Password is never transmited over networks to servers, only the User Device Key is.



Similar to the registration process, the only keys stored on the password managers' servers are the User Device keys.

AND THE BEST PASSWORD MANAGER IS

DASHLANE

Dashlane offers the best blend of security, features and ease of use. Its Security Dashboard is a quick way to keep up to date on how secure your accounts are, and its auto-login feature was the best and most intuitive by far. Dashlane is even able to notify you if a particular website or service that you are using has been compromised. On top of that, Dashlane provides a great deal of freedom on how you can manage your passwords. For instance, you can choose to sync your passwords across multiple devices, or not. And should you turn off password syncing, Dashlane will immediately delete all of your data from its servers, removing hacking risks. It may have the priciest subscription rate, but considering its wealth of premium features, it's well worth it.

LASTPASS

If you want a password manager that offers the most bang for buck, LastPass is your best bet. Unlike the other password managers, the free version of LastPass is almost as good as the paid option. Multi-platform password syncing will require a paid subscription, but even then, LastPass is very affordable at just US$12 a year or US$1 a month. In terms of ease of use and functionality, LastPass is a good match for Dashlane. We like how LastPass clearly indicates fields that it can fill up based on details that you have already saved into LastPass. Additionally, we also appreciate its Security Challenge feature that analyzes your passwords and tells you if any of them are old, weak or duplicates.

TAP FOR GALLERY

PERFECT COMBO

Oppo PM-3 & HA-2

OPPO PM-3

Type
Closed-back planar magnetic headphones

Driver size
55mm

Impedance
26 Ohm

Weight
320g (w/o cable)

Price
RM1,619

SPECIFICATIONS
Frequency response 10 – 50kHz // **Driver type**: Planar magnetic // **Design** Closed-back // **Sensitivity** 102 dB // **Warranty** 1-year // **Contact** Oppo Electronics Sdn Bhd // **Telephone** (03) 7958 5399 // **URL** www.oppodigital.com.my

You're dead wrong if you thought Oppo only manufactured smartphones. The company actually has a number of divisions across the globe, each designing products that are specific to a particular region. Oppo Digital is among these divisions, and has a HQ located in Mountain View, California. The division is perhaps best known for its universal upconverting DVD and Blu-ray disc players.

For something a little more recent though, the team at Oppo Digital were responsible for the PM-1 and PM-2 headphones, as well as the HA-1 headphone amplifier. If you didn't know, both the PM-1 and PM-2 were well received by headphone enthusiasts for their exceptionally high level of audio quality. This year, the team behind those products is at it again with the PM-3 headphones and HA-2 headphone amplifier.

The important thing to know about the PM-3 is that it uses planar magnetic technology. Without going into too much details, headphones that use planar magnetic technology features a large membrane that's suspended between two permanent magnets that are oppositely aligned. When electricity is introduced to the membrane, the entire membrane is equally charged, thus it moves uniformly. This translates into audio that's mostly neutral, with very little distortion.

Here's where things get interesting – planar magnetic technology isn't new. They've been used for many decades now, but they haven't really caught on because of the sheer size of the magnets. Planar magnetic headphones are usually much bulkier than those using dynamic drivers. However, Oppo has managed to squeeze this technology into the PM-3, while keeping the weight down. This pair of headphones weighs 320g, making it the world's lightest planar magnetic headphones.

Aesthetically, there's no denying that the PM-3 looks premium. Its hinges are made out of metal and there's plenty of padding on the headband. Even the ear cups feature plush foam for high comfort. Overall, the PM-3 is very well constructed, so there's no need to treat it like a fragile piece of equipment. In case you were wondering, this pair of headphones is available in black or white.

Most importantly though, is how this headphones sound. Before we proceed, it's important to mention that we tested the PM-3 with the HA-2. While the PM-3 does not require the HA-2 to function,

OPPO HA-2

Type
Portable headphone amp/DAC

DAC chip
ESS Sabre32 ES9018-K2M

Battery
3,000 mAh

Battery life
Up to 13 hours

Price
RM1,319

SPECIFICATIONS
Frequency response 20 – 200 kHz // **Recommended headphone impedance** 16 – 300 Ohm // **PCM sampling frequencies** 44.1 – 384 kHz, 16/24/32-bit // **Dimensions** 68 x 157 x 12 mm // **Warranty** 1-year // **Contact** Oppo Electronics Sdn Bhd // **Telephone** (03) 7958 5399 // **URL** www.oppodigital.com.my

There are plenty of connectivity options on the Oppo HA-2.

CONCLUSION

The Oppo PM-3, when paired with the HA-2, offers extremely high details, awesome soundstaging, and high accuracy.

the HA-2 goes a long way in bringing out the full potential of the PM-3. With the HA-2's Bass boost enabled and Gain set to High, soundstage is excellent, and every single bit of detail could be heard. In The Eagle's 'Hotel California', the guitars, vocals and percussions take center stage, but the cymbals and keyboard, which are in the background, could also be clearly heard. Being neutral in nature, the PM-3 also performs well in other genres of music as well.

Now that we've covered the PM-3, it's time to talk a little about the HA-2. As mentioned above, the HA-2 is marketed as a companion (and optional) accessory for the PM-3. It's a portable headphone amp/DAC that serves to boost and enhance the audio quality from a myriad of sources, including iPods, iPhones, Android devices, PCs, and Macs.

For the enthusiasts, you'll be happy to learn that this amp/DAC uses ESS' Sabre32 ES9018-K2M DAC chip, which supports PCM audio up to 384 kHz/32-bit and DSD audio up to 12MHz. For the uninitiated, this means that this headphone amp/DAC is able to process lossless audio without much issues.

As for design, the HA-2 looks really sleek and slim. It definitely fits into most pockets, making it a highly portable device. Apart from that, it's covered by a layer of leather that adds a dash of class. In a nutshell, the HA-2 looks great.

There are three input options on the HA-2, making it one of the more flexible portable amps on the market. There's a USB Type-A port, a Micro-USB port, and a 3.5mm audio-in port onboard. The USB Type-A port works with any iOS device, while the Micro-USB port is used to connect to Android devices, PCs or Macs. Finally, the 3.5mm audio-in is used to connect media players.

As with most high-end portable amps, there's the option to select the amount of gain. Low gain is optimized for in-ear monitors, while High gain boosts things up, delivering up to 300mW into headphones. Bass boost adds more punchy bass, perfect for when listening to tracks from Daft Punk. Of course, there's an integrated volume knob to make it easier to adjust the volume, without having to reach for your phone while on the move.

That's not the end of it. The HA-2 supports Oppo's VOOC rapid-charge technology. When plugged into the bundled rapid charger, you'll get a full charge in about half an hour. The best part? This portable amp also doubles as a portable battery bank! It features a 3,000mAh internal battery, which is sufficient to supply emergency power to most modern smartphones and tablets. Oppo also provides integrated green LED status lights to make it easy to check on the device's current charge.

by *Bryan Chan*

TESTED & RATED

9.0/10

HWM MALAYSIA

Available at
PLAZA LOW YAT

COMPACT SURROUND

Philips HTL7140B

AT A GLANCE

Sound System
Dolby Pro Logic II, DTS Digital Surround

Driver Per Main Bar
2x speakers for center channel, 2x 1-inch Mylar tweeters, 4x speakers for front/surround

Subwoofer Type
Wireless subwoofer, Bass reflex system

Subwoofer Drive
1x 8-inch woofer

Price
RM2,331

The included remote made accessing the soundbar's features more direct. However, it is not crucial for its operation.

CONCLUSION

It's a soundbar speaker we would recommend for those who are looking to upgrade their existing sound system with limited space to spare.

SPECIFICATIONS
Rear Connections Digital optical in, HDMI 1.4 output (ARC), HDMI-in, 3.5mm audio-in jack, USB // **Wireless Connections** Bluetooth aptX, AAC // **Integrated Connections** Bluetooth aptX, NFC // **Wall Mountable** Yes // **Dimensions** Main unit: 1,060 x 38 x 54.5 mm, Subwoofer: 195 x 304 x 400 mm // **Warranty** 1-year // **Contact** Gibson Innovations // **Telephone** 1 800 880 180 // **URL** www.philips.com.my

Adding a soundbar to your home entertainment setup is one of the easiest options, and is the most space-saving one. Although it is an attractive proposition, most soundbar speakers can't deliver, and although compact, their price tags and the nest of wires and components required to set them up doesn't make them any better than a standard home audio system. Luckily, things are a little different with the Philips HTL7140B.

The HTL7140B comes in a huge box, but don't let that fool you. Inside is the main soundbar unit, which weighs 1.5kg and is a little over one meter in length, along with a boxy 8-inch subwoofer. Together, Philips boasts that the system is capable of 5.1-channel surround sound. Being the inquisitive type, we relish at the thought of putting the claim to the test.

Aesthetically speaking, the soundbar is a thing of beauty. It has clean lines with a diamond-cut aluminum top, a metal grill that runs the entire front face and sides, and no buttons – giving it a premium and sophisticated look. The subwoofer, being a big black box, shares the same premium build and feel, but not the looks.

The main advantage of the HTL7140B is wireless connectivity. The subwoofer connects wirelessly to the soundbar unit, removing clutter and placement constraints. Nevertheless, both units need to be plugged in to function, and the soundbar needs to be connected to the rest of the entertainment system via wires.

Despite its size, the audio comes across loud and clear, faithfully recreating the 5.1 surround sound experience that is effective in a medium to small setting like an apartment. The subwoofer is tastefully balanced for both movies and music, although it could overpower the soundbar if placed too close to one another.

For conversation-heavy films and TV series, dialog is easily heard with the soundbar. This is because two center speakers on the HTL7140B are dedicated to produce clear voices. Don't expect bone-shaking explosions though.

A novel feature that we really like on the soundbar is its ability to connect to mobile devices via NFC and Bluetooth. We imagine coming home, giving our smartphone a gentle tap on the soundbar, and continue listening to our podcasts or playlists in the comfort of home.

Music on the soundbar is good, but dedicated speakers would fair better. It handles mid to low ranges very well, and vocals take great advantage of the center speakers.

By Azizul Rahman Ismail

TESTED & RATED
8.5/10
HWM MALAYSIA

Available at
PLAZA LOW YAT

TAP FOR GALLERY

UNLEASH THE FURY WITHIN

This month, we take a look at AMD's comeback flagship, the Radeon R9 Fury X.

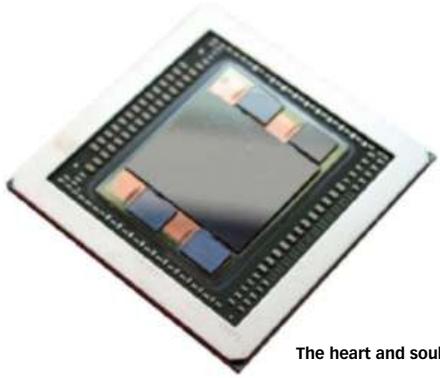
by *John Law*

A NEW FORM OF POWER

AMD's new flagship card, the Radeon R9 Fury X, is finally released after nearly two long years of anticipation from the community (AMD's last single GPU flagship, the R9 290X, was announced back in 2013). This month, the card has finally arrived in our lab, truth be told, we couldn't be more excited to test out what AMD has claimed to be its crowning glory, and a solid competitor against its competitor.

SLOW AND WIDE

So, what's new with the Fury X, and what makes it so special? The answer to that question can be summarized into three simple words: High Bandwidth Memory, or simply HBM, as AMD calls it. We also know your next question: What is HBM, and how is it different from the current GPU memory format?



The heart and soul of the Fury X: the Fiji GPU.

The size difference between the Fury X and a Radeon R9 390X.

HBM is the latest incarnation of graphical memory developed by AMD, and was designed as a replacement for the already aging GDDR5 memory format. Essentially, the HBM architecture is a form of 3D memory which, unlike GDDR5, involves the stacking of the DRAM dies on top of one another, and then placing them virtually next door to the graphics processor. By placing both the stacked DRAM side by side with the GPU and on the same interposer, the travel time for information between the DRAM and processor is both dramatically and significantly reduced.

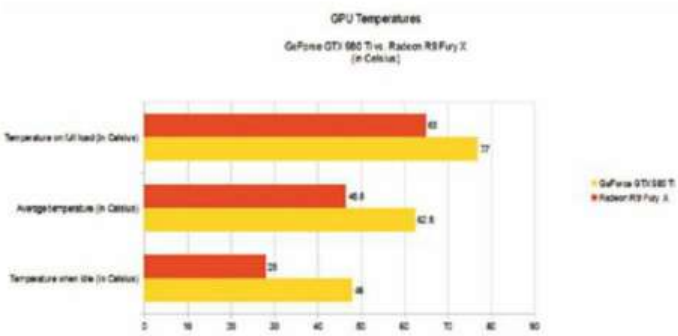
Compared to the standard GDDR5 memory that is still use on graphics cards, the new Fiji GPU on the Fury X only sports four stacks of the new HBM architecture. The potency of stacked memory is very stark (even on our tests): each stack are designed to run on a 1,024-bit memory bus, giving the Fury X a total memory bus of 4,096-bit, but with a lower clock speed of 1,000MHz. Yes, that memory speed is slower than normal when compared to a industry standard of 7,000MHz, but the slower clock speeds and bigger memory bus give the Fiji GPU a performance boost of over 35GB/s per watt, compared to GDDR5's 10.66GB/s per watt.

Richard Huddy, Chief Gaming Scientist at AMD explained this phenomenon the best:

"The new HBM architecture represents the process which I – and by extension, AMD – have always believed when it comes to memory processing, and that is 'Slow and Wide.' To put it into perspective: imagine that you're on a highway. Now, imagine that highway has many, many lanes on it, but also heavy traffic. The high number of lanes on the highway effectively allows for more cars to pass through without any problems, albeit at a slower speed. That concept is exactly how our new HBM architecture works: the bigger memory bus, coupled with the lower clock speeds, allows HBM's stacked memory to produce significantly more bandwidth per watt, than the card that uses a smaller memory bus and faster memory clock speeds."

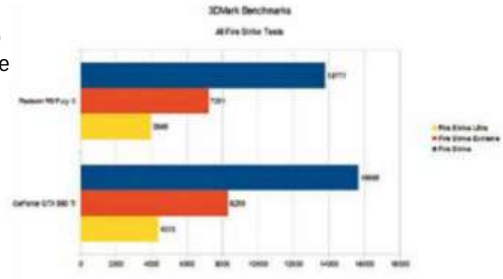
AMD has added in a set of TAC Light LEDs, which shows you how hard the card is working.

Touching on the aesthetics, AMD's Fiji GPU also grants the Fury X another benefit: size. Even with its 120mm radiator sticking out at the other end, the size of the Fury X is significantly smaller than your standard fan-cooled graphics cards.



BURNING IN THE FURY

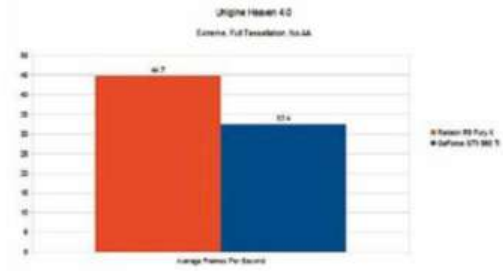
Finally, we get to the main event of this Lab Exam: the performance numbers of the Fury X. For this Lab Exam, we pitted the card against Gigabyte's G1 Gaming GeForce GTX 980 Ti. In our opinion, however, we would've liked to have actually pitted the card against the TITAN X, but unfortunately, the card was no longer with us.



Our test rig is as listed below:

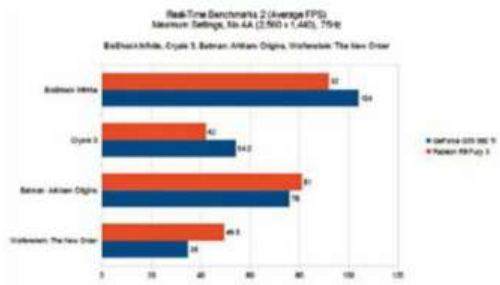
- Intel Core i7-5960K Haswell-E
- MSI X99S XPOWER AC
- 4x 4GB DDR4-3200MHz Apacer Blade Memory
- Corsair RM1000 PSU
- Cooler Master Seidon 240mm Closed-Loop Water Cooler
- 1TB WD Velociraptor HDD
- 480GB Kingston HyperX Predator M.2 SSD
- Windows 7 Ultimate 64-bit

Now, usually we would use our three-way, multi-display monitor setup in order to benchmark the card in its full glory. However, for this particular Lab Exam, we were actually fortunate enough to have Acer's 34-inch XR341CK curved ultra-wide gaming monitor with us.



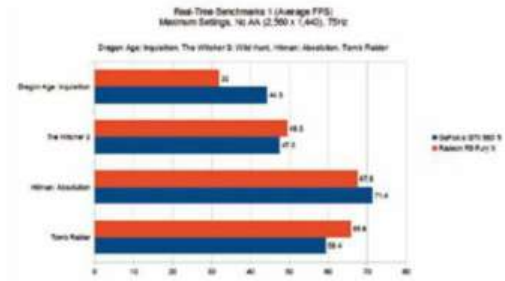
Our synthetic benchmarks consist of the most up-to-date 3DMark and Unigine Heaven 4.0, while our real-time gaming benchmarks consisted of the following games:

- Dragon Age: Inquisition
- The Witcher 3: Wild Hunt
- Hitman: Absolution
- Tomb Raider
- BioShock Infinite
- Crysis 3
- Batman: Arkham Origins
- Wolfenstein: The New Order



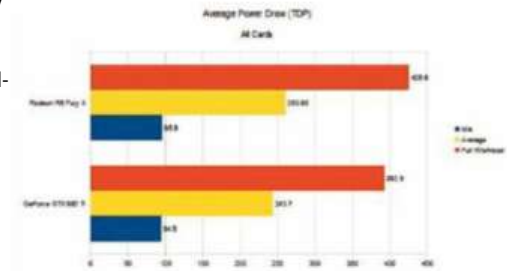
As a gentle reminder, we run all of our benchmarks with graphics overclocked, which is why our benchmarks may differ slightly from other benchmarks conducted by different sources. In the case of the Fury X, we weren't able to push the clock speed of the cards beyond an additional 20MHz for a few reasons. The first reason is due to HBM: because the memory format is still in its infancy stage, there really isn't a lot of overclocking headroom for the card. Concurrent to that, AMD themselves have said that there weren't going to allow manufacturers to overclock the card beyond its standard GPU clock speed of 1,050MHz, citing the same reason: that the technology is still new and relatively untested.

As we had expected, the Fury X had absolutely no problems in performing any and all graphical duties which 3DMark's Fire Strike, Fire Strike Extreme, and Fire Strike Ultra benchmarks demanded. Running Unigine Heaven on Acer's XR341CK was an absolute treat, with the card actually averaging 44.7 fps in that benchmark, beating out the GTX 980 Ti.



The Fury X actually surprised us a little during our real-world gaming benchmarks, especially when it came to running AMD-centric titles like Dragon Age: Inquisition. With all the game settings maxed out and the display's refresh rate set at 75Hz, the Fury X's average frame rate of 32 fps lost out to the GTX 980 Ti's 44.3 fps average.

Again, the Fury X surprised us by beating out the GTX 980 Ti by a very thin frame rate margin of 2 fps on The Witcher 3: Wild Hunt. However, it should be noted that while we were playing the game on the Fury X, there were major stuttering issues that only seemed to affect the Fury X, and not other AMD cards.



Overall GPU temperature is a category that the Fury X dominates, thanks on no small part to the closed-loop water cooling solution (courtesy of Cooler Master) that AMD had chosen to fit on to it. While the charts indicated that its idle temperature was around 28-degree Celsius, there were times when we found it to be sitting at 26-degree Celsius.

When it comes to power consumption, both the Fury X and GTX 980 Ti hold each other at a draw. Despite AMD's claim that its new HBM architecture is more efficient, it is sadly still based off the 28nm process. That being said, the Fury X is still a lot more silent than the GTX 980 Ti because of the water-cooling solution and the gentle-blowing 120mm Typhoon fan attached to the radiator.

CONCLUSION

The Radeon R9 Fury X is everything you'd expect of a flagship graphics card, and a little more: Powerful, compact, silent, and unassuming. Yes, both NVIDIA's GeForce GTX 980 Ti and TITAN X still have the edge in terms of raw power, but consider this: the Fury X HBM architecture may still be new, but it's already capable of going toe-to-toe with the TITAN X (let alone the GTX 980 Ti), and it's also considerably cheaper too.

THE SKY'S THE LIMIT

Intel Core i7-6700K 'Skylake' Processor

by *John Law*

A (PROPER) NEW GENERATION

For a while now, there has been a silence in the world of CPUs. Intel's 'Devil's Canyon' is now officially yesterday's news, and 'Broadwell' – despite the community having hailed it as Intel's 5th generation processors - has all but made its impact in the PC world. Even though the Haswell-E came shortly after Devil's Canyon, it wasn't a CPU that many people would've been able to afford, let alone consider as an option for their rig. Well, Intel's new 'tock' of its 'Tick-Tock' cadence has finally arrived: 'Skylake' is finally here in our labs and quite frankly, we couldn't be anymore excited.

There's a lot to be said about Skylake. For starters, it's manufactured using a new FinFET fabrication process, which essentially means that it has a thinner but more efficient process node (you can pretty much thank Moore's Law for this innovation). How much smaller is it? 14nm, which is a heck of a lot thinner when compared to Haswell's and Devil's Canyon's 22nm. That being said, reducing down from 22nm to 14nm isn't easy or cheap, and with Intel's goal of creating a CPU with a 10nm FinFET die process just means that it's going to get more expensive over time to, once again, adhere to the tenets of Moore's Law.

But thanks to a better Thermal Interface Material (which they had improved upon since its implementation on Devil's Canyon), Intel has managed to set the default clock speed of the Core i7-6700K at 4.0GHz with a Turbo Boost of 4.4GHz: a considerable 200MHz more than the previous generation CPU. Naturally, as we run all of our benchmarks with all components overclocked, we were certain that there was a higher speed in which the Core i7-6700K could achieve, though how far we managed to push it was a surprise (more on that a little later).

REACHING FOR THE SKY: THE BENCHMARKS

So let's get right down to answering the core question of this article: How does Intel's new Core i7-6700K 'Skylake' CPU perform in real time?

Well, before we get started, here are all the specific details that you'll need to know about the new Core i7-6700K:

- 4.00GHz base frequency (up to 4.40GHz turbo frequency)
- 14nm die process
- Unlocked core ratio multiplier
- Intel Turbo Boost Technology 2.0
- Intel Hyper-Threading Technology
- 4 cores, 8 threads
- 8MB Intel Smart L3 Cache
- Dual-channel DDR4 2,133MHz native memory support
- 16 PCIe 3.0 lanes
- Intel HD Graphics 530 (GT)
- 91W TDP
- LGA 1151 socket

Now, before we go any further, it's important to note that this Skylake CPU isn't a processor that was designed in Intel's Extreme CPU line. Lest we forget, the Core i7-6700K was not designed to go toe-to-toe with the Haswell-E, let alone its direct competitor's own set of extreme processors and APUs. Instead, for this Lab Exam, we will be pitting it against its predecessor, the Intel Core i7-4790K, in order to see if it is more powerful or not (you can also check out our August 2014 issue to see how well it fared against its own predecessor).

Also, despite the fact that the Core i7-6700K is using the latest Intel HD Graphics 530, we'll be using an external graphics card in order to ensure that our benchmarks run smoothly.

The specifications of our test bench are as listed below:

- ASRock Z170A Gaming K6 motherboard
- 16GB Kingston HyperX Fury DDR4 2,666MHz Performance RAM
- AMD Radeon R9 390X
- Kingston HyperX Predator PCIe M.2 480GB SSD (Windows 7 64-bit OS and Benchmark Programs)
- WD Caviar Black 1TB 7200RPM HDD
- Corsair RM1000W PSU
- Gelid GX-7 Air Cooler

As mentioned earlier, we definitely managed to overclock the Core i7-6700K, but were surprised with the actual speeds we obtained from overclocking. Compared to the previous generation Core i7-4790K, which we managed to push well beyond the 4.4GHz core clock speed, our processor actually maxed out at a core clock speed of 4.3GHz (4.7GHz with Turbo Boost). That's only an additional 300MHz more compared to the additional 700MHz we got out of the Devil's Canyon, and with an air-cooled heatsink no less. As you would expect, anything more than 300MHz, and the entire system would begin crashing and rebooting until we brought down the speeds to acceptable levels.

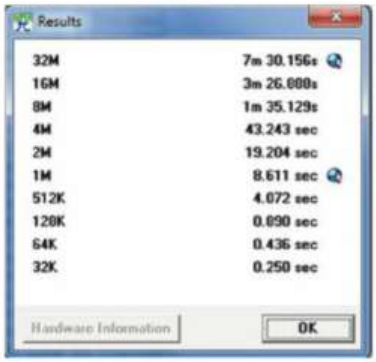
Also, if you're wondering why we're using an air cooler rather than a closed-loop water cooler, it's due a simple reason: Water coolers are fantastic to use, there's no doubt about that. However, the price you would have to pay for one when compared to an air cooler is actually very big. In lieu of that, we tested our Skylake processor with pretty decent quality air cooler, so as to reflect scores that would most likely be achieved by users who cannot afford a water cooler for their CPUs.

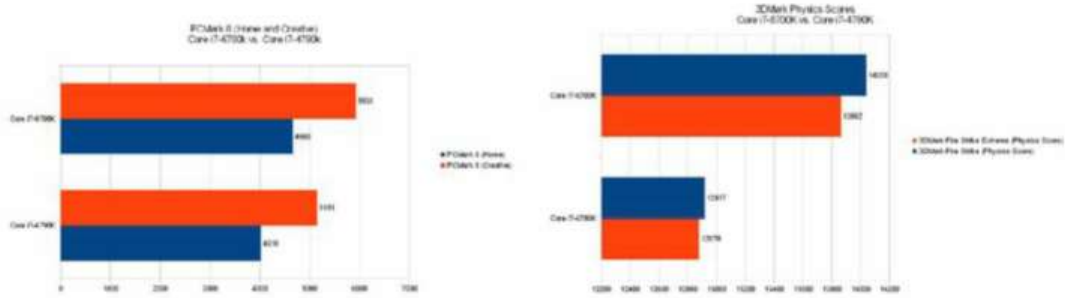
As it stands, our benchmark methodology hadn't changed much: we still use 3DMark's Fire Strike benchmark in order to gauge a CPU's score for physics calculations and computational scores, while PCMark 8's Home and Creative benchmarks provide us with an overall aggregate of the system and the processor. For this benchmark, we have chosen to not run our usual PCMark 7 benchmark, as we believe that the program is already outdated and that its scores will not accurately depict the power and efficiency of the Core i7-6700K.

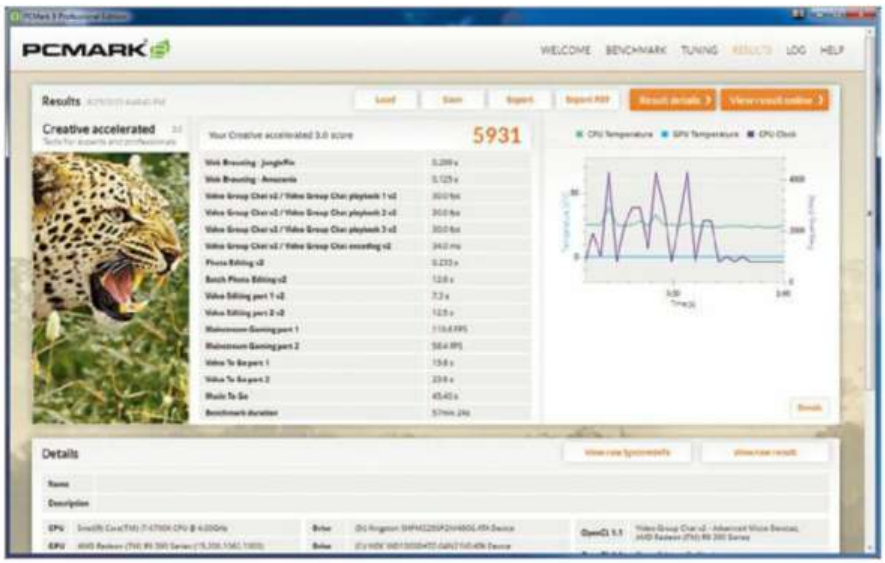
As with our previous Lab Exam with the Devil's Canyon processor, we also ran the Super Pi benchmark to further gather information about the processor's calculative prowess. As a refresher of how Super Pi works: the faster the CPU calculates the problems presented to it by the program, the better it is.

And this is where despite the paltry overclock speed that we got, the Core i7-6700K actually astonished us. On 3DMark's physics scores, you can see straight away just how far the Skylake pulls ahead of the Devil's Canyon when it comes to calculations. We're actually looking at a difference of more than 2,000 points just from a mere 300MHz increase in its clock speed. The same can also be said on the PCMark 8's Home and Creative benchmark suites. Our Core i7-6700K CPU scored nearly 6,000 points on the Creative benchmark, which is almost 1,000 points more when you compare it to Devil's Canyon's own score of 5,151.

On Super Pi, we ran the full range of calculations from 16K all the way up to 32M. In this sense, the Core i7-6700K's calculation speed were pretty much on par with its predecessor, taking less than a fifth of a second to complete 16 thousand calculations, and a little over seven minutes to complete 32 million calculations.







CONCLUSION

So, what do we think of Intel's new Core i7-6700K CPU? Well, to reiterate, it actually astonished us with the scores it delivered during our benchmarks, and with only a mere increment of 300MHz, and with an air-cooled heatsink. We're almost certain that if we had used a closed-loop water cooler, we could've most certainly overclocked this processor well beyond the 300MHz mark. Needless to say, if you're looking to build yourself a new enthusiast-level rig this Christmas, you might as well spend a chunk of your budget on this.

DISCRETE BUT POWERFUL

ASRock Fatal1ty Z170 Gaming K6

AT A GLANCE

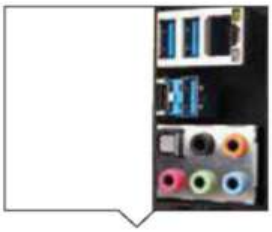
Processor
6th gen Intel Core / Pentium / Celeron

Chipset
Z170 (LGA1151)

SLI / CrossFireX
Yes / Yes

SATA3 / USB3
Yes / Yes

Price
TBA



One of the first motherboards to have the USB 3.1 Type-C.

CONCLUSION

While it isn't one of ASRock's high-end motherboards, the Fatal1ty Z170 Gaming K6 managed to strike a balance between style and substance.

SPECIFICATIONS
Model Z170 Gaming K6 // **Memory Support** Up to 64GB DDR4 3600+(OC) / 3200 (OC) / 2933 (OC) / 2800 (OC) / 2400 (OC) / 2133 non-ECC, un-buffered memory // **Audio** Purity Sound 3 7.1 CH HD Audio // **Drives** 2x SATA3 6.0Gb/s, 2x SATA Express 10Gb/s, 1x Ultra M.2 socket, supports RAID 0, 1, 5, 10 // **Slots** 3x PCIe 3.0 x16 (at 16/0/0, 8/8/0, 8/8/4) // **I/Os** 1x PS/2 combo, 1x D-Sub port, 1x DVI-D port, 1x HDMI port, 1x DisplayPort 1.2, 1x Optical SPDIF Out port, 2x USB 2.0 ports (front only), 1x Fatal1ty Mouse port, 7x USB 3.0 ports (5 rear, 2 front), 1x USB 3.1 Type-A port, 1x USB Type-C port, 1x Killer E2400 LAN port with LED, HD audio jacks // **Form Factor** ATX // **Contact** AMT PC Distributors Sdn Bhd // **Telephone** (03) 3344 1124 // **URL** www.asrock.com

It's been a while since we last reviewed a motherboard, and with good reason. After the release of Intel's 'Devil's Canyon' processor (which was essentially a refreshed version of its 4th generation Haswell processor), there honestly wasn't much difference between both the processor's performance and the accompanying motherboards, save for the Devil's Canyon's more efficient thermal control. It's been a year, and Intel's 'Skylake' desktop CPU has arrived, and with it, a whole new range of motherboards that are designed to support the latest Z170 chipset, such as the ASRock Fatal1ty Z170 Gaming K6 here.

As per the tradition of the Fatal1ty gaming motherboard series, the overall aesthetics of the Z170 Gaming K6 adheres to a traditional motif of an all-black color scheme for its PCB and components, followed by a sports car red trim for all of its heatsinks. In our opinion, this black-and-red motif is actually a good look for the Z170 Gaming K6; ASRock chose not to garishly adorn the motherboard with loud colors (unlike some motherboard manufacturers we know), and instead went for something that speaks volumes by itself, while still looking unassuming.

Naturally, it goes without saying that the Z170 Gaming K6 itself ships with numerous improvements and additions to itself. The first (if not, the most obvious) change is the chipset. The board is designed to support Intel's new 14nm Skylake processor. The second feature that you'll notice about it is the addition of speedier Ultra M.2 SATA SSD slot built directly into the board. If there's one new addition that's worth mentioning, it would have to be ASRock's decision to make a USB 3.1 Type-C port as part of its I/O ports in the back.

I/O ports and vanity points aside, let's talk about performance. To test it out, Intel had been kind enough to provide us with the Core i7-6700K CPU, to which we overclocked from 4.0GHz to 4.3GHz for the duration of our tests with PCMark 8's Home and Creative benchmarks, along with 3DMark and Super Pi. On PCMark 8, the motherboard (along with the 'Skylake' CPU) procured a score of 4,665 and 5,362 for the Home and Creative benchmarks, respectively. On 3DMark, we saw an average of 14,000 points on the CPU tests for all Fire Strike benchmarks, during which, the motherboard's overall temperature kept itself between 38- and 45-degree Celsius, and never went past it. For Super Pi, the fastest that we attained with the motherboard was less than one second for 16 thousand calculations, and seven minutes and 26 seconds for 32 million calculations.

By *John Law*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at
PLAZA LOW YAT

ULTRA-WIDE PERSPECTIVE

Acer XR341CK

AT A GLANCE

Size
34-inch ultra-wide

Panel Type
IPS

Response Type
4ms (Gray-to-Gray)

Resolution
3,440 x 1,440 (QHD)

Price
RM3,699

The Acer XR341CK has a total of four USB 3.0 ports on its back.

There's no better way to prove that curved monitors are slowly gaining traction than to have two of them being subjected to a review this month alone. In this particular review, we'll be taking a close look at Acer's flagship XR341CK ultra-wide curved monitor to find out whether it's able to stay ahead of the curve (pun totally intended).

The XR341CK is a 34-inch ultra-wide IPS display that boasts a QHD (3,440 x 1,440) resolution, a 21:9 aspect ratio, 172°/178° viewing angles, and Adaptive-Sync technology which, in a nutshell, would help prevent any screen tearing and stuttering especially when you're playing lightning-paced first-person shooters.

As with most curved monitors out there, the XR341CK is an absolute looker – from its sleek, curved screen that has extremely thin bezels, right down to the solid, silver aluminum frame that helps to prop it up. But what we particularly liked about the XR341CK's design is the row of LED ambient lights that sits beneath the display. Its brightness, color (red, green, blue, white, and orange), and lighting style (fixed, breathing, flashing, ripple) can all be tweaked to your preference within the monitor's on-screen display.

The XR341CK also sports dual 7W speakers, which we thought were pretty loud and clear, and showed minimal signs of distortion despite cranking the volume up to the maximum. However, if you're particular about sound quality, you shouldn't be expecting the speakers of the XR341CK to replace your standalone speakers any time soon.

Couch potatoes, if your extensive movie library comprises films that are mostly shot in the 16:9 format, we're sorry to say, but you're going to have to watch them on the XR341CK with two glaringly obvious black boxes by its sides, which is very much a waste of all that screen real estate. You could stretch your movies to fit the screen, but you should only be doing so if you don't mind watching your favorite celebrities being stretched and flattened out in the process.

What the XR341CK excels at though, is gaming, primarily because most games these days are able to proportionately scale itself to the width and resolution of your screen without incurring any geometric distortions. Playing BioShock Infinite on the ultra-wide XR341CK was nothing short of an eye-opening experience, as the XR341CK's purposefully designed curvature left our peripheral vision with no room for any distractions, thus making the game feel decidedly more immersive and engaging.

By *Peter Chu*

CONCLUSION

The Acer XR341CK is able to deliver a visual experience like no other, but only if you provide it with content that can complement its distinct 21:9 aspect ratio.

SPECIFICATIONS
Color Support 16.7 million, 8-bits+Hi-FRC, 100% sRGB // **Brightness** 300 cd/m² // **Aspect Ratio** 21:9 // **Contrast Ratio (ACM)** 100,000,000:1 // **Ports** 1x HDMI (v2.0), 1x MHL, 1x mini DisplayPort, 1x DisplayPort, 4x USB 3.0 downstream, 1x USB 3.0 upstream // **Speaker** 2x 7W, DTS Sound // **Viewing Angle** 178° vertical / 172° horizontal // **Dimensions** 825.1 (W) x 585.9 (H) x 309 (D) mm (w/ stand) // **Warranty** 3-years // **Contact** Acer Sales and Services Sdn Bhd // **Telephone** 1 800 88 1288 // **URL** www.acer.com.my

TESTED & RATED
8.5/10
HWM MALAYSIA

Available at
PLAZA LOW YAT

AN ODDITY THAT WORKS

BenQ XR3501

AT A GLANCE

Size
35-inch

Display Type
2000R Ultra Curve LCD

Response Time
4ms (Gray-to-Gray)

Resolution
2,560 x 1,080

Price
RM3,999

That curve...

CONCLUSION

It may not be a 4K display, but its 144Hz refresh rate makes the XR3501 worthy of your time.

SPECIFICATIONS
Pixel Pitch 320.25mm // **Brightness** 300 cd/m2 // **Refresh Rate** 144Hz // **Aspect Ratio** 21:9 // **Contrast Ratio** 2,000:1 // **Viewing Angle** 178° horizontal / 178° vertical // **Dimensions** 982 x 600 x 308 mm // **Warranty** 1-year // **Contact** BenQ Service and Marketing (M) Sdn Bhd // **Telephone** (03) 7954 7800 // **URL** www.benq.com.my

Curved monitors have been a thing in the gaming world for some time now, and while they aren't quite ready to be considered as a mainstream component for PCs, these slightly out-of-the-ordinary displays do offer a fair bit more than non-curved displays, in terms of features and total immersion. BenQ, however, takes the idea to another level with the XR3501 curved gaming monitor.

To be quite honest, we can't really call BenQ's XR3501 groundbreaking. In fact, the word we would use to describe this monitor is 'peculiar'. While curved ultra-wide monitors have been on the market for a while now, the majority of these monitors usually have screen resolutions of 3,840 x 2160 (Ultra HD or 4K) or 2,560 x 1,440 (Also known WQHD). However, rather than going with the flow, BenQ's XR3501 still sticks with the older screen resolution of 2,560 x 1,080. Simply put? It's an ultra-wide Full HD gaming monitor that's been given the curved treatment.

That being said, there are three features on the XR3501 that really make it stand out. The first is its screen size. At 35-inches, it is the largest non-UHD and non-1440p curve ultra-wide monitor that we've ever played with. The second feature is the curvature of the display. Compared to other curved displays, the curving arc of the XR3501 is both visually and physically obvious. The third (and by far, the most exciting) feature of the XR3501? It runs at a refresh rate of 144Hz, as opposed to the standard 60Hz.

So, the question is: Do all these features actually improve the viewing experience? Yes, it does. Because of the extra screen real estate, that 144Hz refresh rate actually helps to make video and gaming content run smoother and a lot less choppier than when we ran it on 60Hz. On top of that, because the XR3501 is both ultra wide and curved, the level of immersion whenever we played games on it was a real treat.

Sadly, we do have one thing to gripe about, and that is the major screen discoloration whenever we tilted the XR3501 beyond certain angles. While the screen's color accuracy actually feels natural, we noticed that tilting the screen either too far up or down caused some rather significant discoloration at the top corners of the XR3501.

by *John Law*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at PLAZA LOW YAT

MAKING A MARK

MSI GTX 960 Gaming 100 Million Edition

AT A GLANCE

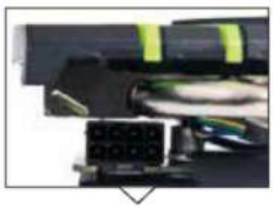
Slot
PCI Express 3.0

GeForce
GTX 960

Memory
2,048MB 128-bit GDDR5

SLI
Supported

Price
RM1,190 (incl. 6% GST)



The MSI GTX 960 Gaming 100 Million Edition only needs one 8-pin power connector to work.

CONCLUSION

We like MSI's GTX 960 Gaming 100 Million Edition simply because it offers commendable performance at a palatable price.

SPECIFICATIONS
Core Clock 1,241MHz (Base) / 1,304MHz (Boost) (OC Mode) 1,190MHz (Base) / 1,253Mhz (Boost) (Gaming Mode) 1,127MHz (Base) / 1,178MHz (Boost) (Silent Mode) // **Memory Clock** 7,010MHz // **Connectors** 1x Dual-Link DVI-I, 1x HDMI, 3x DisplayPort // **Processor Size** 28nm // **PSU Required** 400W (recommended) // **Warranty** 3-years // **Contact** MSI Malaysia // **Telephone** 1 300 22 1986 // **URL** my.msi.com

There's no better way to celebrate a milestone achievement than with a bang – unless, of course, you happen to be MSI, who commemorated its accomplishment of shipping over 100 million NVIDIA GPUs by launching the MSI GTX 960 Gaming 100 Million Edition (100ME). That's perfectly fine, but we can't help but wonder: does it have the necessary firepower to pay homage to MSI's impressive GPU sales milestone? Let's find out.

But first and foremost, let's talk about the aesthetics of the GTX 960 Gaming 100ME. The biggest giveaway that the GTX 960 Gaming 100ME is very much a GeForce-based card is its strikingly designed faceplate, which bears NVIDIA's characteristic green color scheme. Situated within the confines of the faceplate is the card's dual 100mm Torx fans, which work in tandem with MSI's Zero Frozr technology – the latter of which stops the GPU's fans from spinning when the card is not being put through its paces, so that your gaming rig stays quiet. The GTX 960 Gaming 100ME comes with MSI's proprietary Twin Frozr V cooling system as well, which features special SuperSU heatpipes to ensure that the card remains cool while under pressure.

The GTX 960 Gaming 100ME is able to operate in three distinct modes: OC Mode, Gaming Mode and Silent Mode. Each of the three modes has its own respective base and boost clock speeds, and they can be selected through the card's accompanying MSI Gaming App.

But instead of letting the MSI Gaming App do the overclocking work for us, we decided to put in some elbow grease and manually overclock the GTX 960 Gaming 100ME ourselves. After some tinkering, we managed to overclock the base core clock speed of the GTX 960 Gaming 100ME by an additional 160MHz, and its memory clock speed by another 50MHz. Pushing either of the two clock speeds any further would result in display artifacts rearing their ugly heads.

With the increased core clock and memory clock speeds in effect, we began running our usual suite of synthetic benchmarks, which include 3DMark and Unigine Heaven. For the 3DMark benchmark, the GTX 960 Gaming 100ME managed to score 7,049 for the Fire Strike benchmark, 3,711 for the Fire Strike Extreme benchmark, and 1,150 for the Fire Strike Ultra benchmark. The card managed to complete the Unigine Heaven benchmark in Full HD (1,920 x 1,080) with an average frame rate of 35.3 fps.

To gauge the gaming prowess of the GTX 960 Gaming 100ME, we played The Witcher 3: Wild Hunt, BioShock Infinite, Crysis 3, Batman: Arkham Origins, and Dragon Age: Inquisition at their highest possible graphics settings.

The Witcher 3: Wild Hunt scored the lowest average frame rate of the lot, at only 39 fps. Dragon Age: Inquisition ran slightly better at 41 fps, and so did Crysis 3 at 49 fps. Batman Origins and BioShock Infinite ran exceptionally smooth during our tests, as they manage to chart an average frame rate of 70 fps and 104 fps, respectively.

By *Peter Chu*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at PLAZA LOW YAT

TONGA AS IT SHOULD BE

Sapphire NITRO R9 380

AMD's Tonga GPU, which launched in the form of the Radeon R9 285 last year, was a GPU that was designed to be more energy efficient and resourceful than its more powerful cousin, the Hawaii GPU. Today, it's been improved upon and re-released for AMD's new midrange Radeon R9 380 graphics card series, and for this month, we got a chance to review Sapphire's take on the card with its own custom-cooled NITRO R9 380.

The NITRO R9 380 is fitted with 4GB of GDDR5 RAM, compared to the previous generation's 2GB of GDDR5 RAM. This extra memory is a – for lack of a better word – godsend for the card. The extra memory on the NITRO R9 380 is what actually helped this card blitzed through almost all our benchmarks, both synthetic and real-world, which we'll talk about a little later.

The card comes with the standard number of connector ports, which include a DVI-I port, a DVI-D port, an HDMI 1.4a port, and a DisplayPort.

Cooling off the card is Sapphire's own Dual-X Fan Cooling technology, as well as its Intelligent Fan Control II, which only activates the card's fans when the temperature exceed a certain point.

The NITRO R9 380 is a midrange graphics card, catered towards gamers who want that performance-per-dollar improvements without having to break the bank. Having said that, it's a very rare thing when a midrange Radeon graphics card can actually impress us, and Sapphire's NITRO R9 380 did just that when it actually went through our benchmarks without breaking a sweat (and on our multi-display setup, no less).

On 3DMark 2013, the card scored 7,615 on Fire Strike, 3,804 on Fire Strike Extreme, and 1,984 on Fire Strike Ultra. On Unigine Heaven, the card itself managed to hold a steady 20 fps with all settings set to Ultra and Tessellations turn on.

The real-world benchmarks are where the NITRO R9 380 actually shined. The frame rates that the card managed to achieve were actually higher than our initial expectations, and this was with each game's graphics setting set to the highest level. We were looking at average frame rates of 25 fps on Dragon Age: Inquisition, 35 fps on The Witcher 3: Wild Hunt, 42 fps on BioShock Infinite, and 28 fps on Crysis 3.

One of our only gripes with the NITRO R9 380 is an old one, which has existed since the arrival of AMD's Radeon R9 series, and that is the limited overclocking potential of this card. At best, we only managed to bump up the the GPU's clock speed from 985MHz to 1,015MHz, and its memory clock speed by an additional 120MHz during the benchmark process.

By *John Law*

TESTED & RATED

9.0/10

HWM MALAYSIA

Available at

PLAZA LOW YAT

AT A GLANCE

Slot
PCI Express 3.0

Radeon
R9 380

Memory
4,096MB 256-bit GDDR5

CrossFire X
Yes

Price
TBA

That extra 2GB of GDDR5 memory really gives this card a boost.

CONCLUSION

If there ever was a graphics card in the bang-for-your-buck category that impresses us, it would have to be Sapphire's NITRO R9 380.

SPECIFICATIONS
Core Clock 985MHz (Base) / 1,015MHz (Boost) // **Memory Clock** 5,800MHz // **Connectors** 1x Dual-Link DVI-I, 1x Dual-Link DVI-D, 1x HDMI, 1x DisplayPort // **Stream Processors** 1,792 // **Processor Size** 28nm // **PSU Required** 500W minimum // **Contact** Build Technology Sdn Bhd / JW Power Marketing Sdn Bhd // **Telephone** (03) 7955 3699 / (03) 2148 1307 // **URL** www.sapphiretech.com

THE FUTURE IN C

Kingston DataTraveler microDuo 3C

TAP FOR GALLERY

AT A GLANCE

Capacity
32GB

Connector plugs
USB Type-A, USB Type-C

Interface
USB 3.1

Dimensions
29.94 x 16.60 x 8.44 mm

Price
RM89

We weren't kidding when we said it was small.

CONCLUSION

Bridging the present and the future with impressive USB 3.1 speeds.

SPECIFICATIONS
Operating Temperature 0°C to 60°C // **Storage Temperature** -20°C to 85°C // **Warranty** 5-years // **Contact** Amble Action Sdn Bhd / Convergent Distribution (M) Sdn Bhd / Ingram Micro Malaysia Sdn Bhd // **Telephone** (03) 7968 6899 / (03) 2144 1881 / (03) 7952 8188 // **URL** www.kingston.com

USB standards are moving on to the new frontier that is USB Type-C. While that is going on, USB flash drives have also been continuously shrinking in size, while packing more virtual space within them. We've first seen something like this during COMPUTEX, and we how have it in our hands. Behold the Kingston DataTraveler microDuo 3C.

As you can probably imagine from the way we started this review – and probably from the name of the product – the DataTraveler microDuo 3C is both a USB 3.1 Type-A and a USB 3.1 Type-C flash drive. On one side, you'll find the familiar Type-A USB connector, and on the other, the fairly novel USB Type-C connector with a protection cap of sorts over it. And that's all there is to the DataTraveler microDuo 3C. You'd probably wonder, when you look at it, where is the virtual space being housed, and we don't blame you if you do. Even with the cap on, the DataTraveler microDue 3C can fit on top of an SD card. It's so small, it would take up almost no space at all if you need to pack them up for your travels, but this also means it's easy to lose sight of it.

As of now, the current USB Type-A connector will still be seeing a fair bit of use, considering the limited number of devices that actually have a Type-C connector port on them. However, we're sure USB Type-C will slowly see more use, with more and more devices being launched supporting it, killing off the irritation that could arise from accidentally trying to plug in a USB drive with the connector upside down.

We ran our usual file transfer tests, as well as the CrystalDiskMark benchmark. The benchmarks rated its sequential read and write speeds a little over what Kingston itself rates the microDuo 3C, resulting in an average of 116.8 MB/s for read and 16.4 MB/s for write. As for actual file transfers, 1GB was transferred in two minutes and two seconds, while 4GB took four minutes and 43 seconds. There is also no real difference in speed between which connector plug you choose to use, since both make use of the same USB 3.1 interface.

The Kingston DataTraveler microDuo 3C then, is a bridge that connects two worlds; the current one that is still predominantly reliant on USB Type-A, and the coming one that has already embraced USB Type-C on a mass scale.

By *Ian Chee*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at PLAZA LOW YAT

SPEEDY AND USEFUL

Silicon Power Slim S85 SATA III SSD (480GB)

There's nothing more gratifying than installing an SSD into your desktop or notebook PC. It gives your PC that much needed boost in speed, reducing your PC's load times significantly from several minutes to several seconds. As the market for SSDs slowly becomes more saturated, prices for these non-volatile storage devices are slowly but surely decreasing, and that means that manufacturers are able to offer their SSDs with bigger storage capacity at more affordable prices. This month, we take a look at Silicon Power's Slim S85 SATA III SSD, and see if it is actually worthy of your time.

On the outside, SSD aesthetics actually follows the same design. The controller and memory chips are all stored within a standard 2.5-inch drive casing. Apart from the sticker that details the company's logo, model number, and storage capacity, nothing else peppers this SSD.

The one aesthetic factor that does make this Silicon Power SSD stand out from the rest is its slim form factor. Compared to a majority of its competitors, the S85 boasts an extremely slim figure, with an overall thickness of only 7mm. In addition to that, it's also considerably light, weighing in at only 64g (which is far lighter than almost every other SSD on the market).

As we've mentioned in a previous review for another SSD, benchmarking these storage devices are easy and quick. We run the CrystalDiscMark benchmark and our file transfer test in order to see how fast an SSD completes a file transfer from another drive to itself. For CrystalDiscMark, we ran the benchmark at two different sequential tests at speeds of 1,000MB/s and 4,000MB/s. The scores the S85 attained on all four tests pretty much had the same average speeds throughout, hovering between 530MB/s for sequential read speeds and 510MB/s for sequential write speeds.

As for the file transfer test, the S85 managed to copy over our standard 1GB and 4GB file in 24 seconds, which is several seconds faster than some of its competitors. When it came to large file transfers, this SSD completed the transfer of a 25GB and 40GB file within 55 seconds for the 25GB file, and five minutes and 32 seconds for the 40GB file.

Because Silicon Power had made the claim that the S85 is a gaming-grade SSD, we loaded up one of our games from the test library, and fired it up to test out their claims. On average, it would take between one to three minutes for the game to fully load up. On the S85, our game went from the loading screen and straight into the game in mere seconds.

by *John Law*

TESTED & RATED

9.0/10

HWM MALAYSIA

Available at

PLAZA LOW YAT

AT A GLANCE

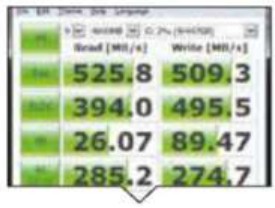
Capacity
240GB, 480GB (Tested), 960GB

Form Factor
2.5-inch

Interface
SATA III

Power Consumption
2.5W

Price
RM899



Truly, this SSD lives up to its gaming-grade status.

CONCLUSION

It's not a looker, but Silicon Power's Slim S85 SSD does live up to the company's claim of being gaming-grade.

SPECIFICATIONS
Sequential Read Speed 560MB/s // **Sequential Write Speed** 540MB/s // **Vibration** (Non-Operational) 20G peak (80Hz-2,000Hz) // **Reliability (MTBF)** 2,000,000 hours // **Warranty** 5-years // **Contact** INGENS Sdn Bhd // **Telephone** (03) 7688 9888 // **URL** www.silicon-power.com

LADY IN RED

Corsair Gaming STRAFE

AT A GLANCE

Switch
Mechanical

Backlighting
Red Only, Customizable

Customizable Keys
All Keys

Multimedia Keys
Yes

Price
RM459 (incl. 6% GST)

The USB pass-through port of the Corsair Gaming STRAFE allows you to always have a USB port within reach.

CONCLUSION

Mechanical keyboards with Cherry MX Red switches simply don't get any better than the Corsair Gaming STRAFE.

SPECIFICATIONS
Cord Length 1.5m // **Features** Cherry MX key switches, fully programmable keys, 104 key rollover, onboard memory, USB pass-through port // **Weight** 1.27kg // **Warranty** 2-years // **Contact** Cudo Technologies (M) Sdn Bhd // **Telephone** (03) 2148 1177 // **URL** www.corsair.com

You can't say that you're a hardcore gamer if you're still using a regular membrane keyboard for all your PC gaming needs. Sure, you might argue that when it comes to competitive gaming, it's skills – and not hardware – that determine winners. But then again, wouldn't it be so much more enjoyable to decimate your opponents while using a proper mechanical gaming keyboard like the Corsair Gaming STRAFE instead?

You can immediately tell that the STRAFE is made with gamers in mind from its striking red backlighting, and that it also comes replete with replaceable, textured key caps for the 'Q', 'W', 'E', 'R', 'A', 'S', 'D' and 'F' keys – which would definitely come in handy to the FPS and MOBA player who needs their primary keys to feel distinctively different from the surrounding keys.

What's more, the STRAFE also comes with a convenient USB pass-through port on its back to negate the need for you to crawl under your desk in search of a vacant USB port at the back of your gaming rig. Speaking of which, we managed to stream 1080p videos smoothly from a portable USB 3.0 hard drive that was connected to the STRAFE's USB pass-through port.

As with most full-sized mechanical keyboards these days, the STRAFE – likewise – comes with a comprehensive selection of lighting effects, including Wave, Ripple, Visor, Rain, Type Lighting (Key), and Type Lighting (Ripple). They can each be selected and further fine-tuned to your preference through the accompanying Corsair Utility Engine software, which could potentially be dauntingly complex to use due to the sheer amount of customization options that it offers.

Sadly, the STRAFE's myriad of lighting effects is subverted by the fact that the keyboard is only able to light up in shades of red – a far cry from the 16.7 million different colors that most mechanical gaming keyboards are capable of flaunting these days.

There's more redness to be found under the STRAFE's keycaps as well, courtesy of its German-built Cherry MX Red switches, which not only requires minimal actuation force to activate, but also offers little to no tactile feedback when you're mashing away at the keys. Simply put, the Cherry MX Red switches of the STRAFE works exactly the way it should.

If you find the Cherry MX Red keys' lack of any physical feedback a little too unnerving, you can always have the STRAFE outfitted with Cherry MX Brown switches, which should, in theory, provide you with a subtle, but assuring tactile feedback with each key press. Sadly though, the STRAFE isn't available with the full-on 'clicky-clackety' Cherry MX Blue switches that serious typists would often swear by.

Nevertheless, after spending a good week using the STRAFE to churn out a mountain of articles (including this review) and wreak havoc in Team Fortress 2, we can wholeheartedly conclude that the STRAFE is a very satisfying keyboard to use, regardless of whether it's for work or play.

By *Peter Chu*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at PLAZA LOW YAT

PREPPING FOR THE FUTURE

Linksys EA8500 Max-Stream AC2600

When it was first introduced, the 802.11ac wireless standard promised better speed and stability for devices using Wi-Fi. Despite this, its adoption has been slow outside of Wi-Fi routers and modems, and it has only recently become commonplace for devices like smartphones and notebook PCs. This divide in standard adoption is set to grow wider with what is known as 802.11ac Wave 2, but when it does become mainstream; Linksys wants you to know that it's got you covered with the EA8500 Max-Stream AC2600 router.

Before we dig deep into the nitty-gritty of the wireless tech's second wave, let's first take a look at the EA8500 Max-Stream itself. By most accounts, it looks like most other routers like it; four external and detachable antennas, four LAN ports and a WAN port, a USB 3.0 port and a USB 2.0 / eSATA combo port. One thing that does stand out is the fact that, other than the Linksys logo that lights up, there are no status LEDs where you'd expect them. The Linksys logo will either flash or be solidly on or off depending on network conditions. This keeps things looking simple and tidy, but on the flip side, when something goes wrong, finding out the source is not as straightforward as it should be. Instead, there are lights on each RJ45 port – one that stays solid when in use and another that blinks when there is data transfer going on – that you'll have to resort to inspecting when something isn't quite right.

Now, onto the tech itself. The 802.11ac Wave 2 standard is basically the advent of Multi-User, Multiple Input and Multiple Output (MU-MIMO) technology, something the Linksys EA8500 is armed with. The idea behind this tech is simple: you can have every device in the household connected to it, and instead of data transfer rates slowing down due to the congestion, speeds remain so fast you'd think each device was connected to its own router. Of course, there is a catch to this: the connected device will have to be able to support the standard which, like when 802.11ac was new, there aren't many in the market today that do.

That said, it still works well with devices using current 802.11ac standards. Running our usual test of transferring 10GB of files through the router between a desktop and a notebook PC, the Linksys EA8500 did it in one minute and 25 seconds; one minute and 49 seconds; and three minutes and 50 seconds for distances of 5m, 10m and 15m, respectively.

by *Ian Chee*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at

PLAZA LOW YAT

AT A GLANCE

Standards
802.11ac (compatible with a/b/g/n)

Link Rate
Max. 1,733Mbps

Antenna
4x high-performance antennas (external)

Frequency
2.4GHz, 5GHz

Price
RM1,499

Having the lights at the back makes the EA8500 look cleaner, but more troublesome to troubleshoot.

CONCLUSION

Until MU-MIMO devices become more common, the true potential of the Linksys EA8500 will remain unutilized.

SPECIFICATIONS
Processor 1.4GHz dual-core // **Ports** 4x Gigabit LAN, 1x Gigabit WAN, 1x USB 3.0, 1x USB 2.0 / eSATA combo // **External Power Supply** 12V DC // **Operating Modes** Wireless router // **Warranty** 1-year // **Contact** Glocomp Systems (M) Sdn Bhd // **Tel** (03) 7652 1188 // **URL** www.linksys.com

EXTENSION WITHOUT REDUCTION

TP-LINK TL-PA8010P Kit

When it comes to network extenders, TP-LINK offers the most variety. The company's latest, the TP-PA8010P, boasts speeds up to 1,200Mbps at a range of 300 meters through the existing power line in your home. It is the fastest speed attached to a device of its kind made by TP-LINK.

Like most of the latest range extenders by the company, the TP-PA8010P has a passthrough feature. It means that you can plug this device to a wall outlet and still have access to a power plug.

Unlike most of its latest range extenders, the TP-PA8010P is particularly large. It measures 131 x 72 x 42 mm and looks like an oversized plug-in insect repellant with its power plug and passthrough at the bottom of the device. It is not meant to be plugged into a power strip, but even when we plugged it into a standard wall socket, getting access to the power switch is a tight squeeze.

Installing the TP-PA8010P was easy. We simply plugged in the device to a power socket, then connect it to a router or a PC, and turn on the device. It will then begin to search for another unit to pair with. The set we reviewed came with two interchangeable units, but the system can handle up to eight of them.

Optionally, you can sync the network extender manually using the button on its side. This is also where the indicator lights are located. They are out of the way, which is great if you don't want to be staring at the constantly on LEDs, but they can also be a bit awkward to get to.

We first tested the TP-PA8010P by connecting it to the Internet. We then run an Internet speed test, first with the PC connected through a LAN cable, and then with the PC connected through the same network through the extender. The results were almost identical and proved that the device delivers speeds through the power line as good as a LAN cable.

We then tested the speed of the device by transferring files back and forth, and we came out impressed. We saw a peak throughput of 405Mbps, and the highest average of 272.62Mbps, with the lowest being approximately 175Mbps.

Note, however, that the performance of the TP-PA8010P will depend on the condition of the electrical wiring of the building where it is connected to. It performs better if each extender is connected in the same electrical loop as well.

By *Azizul Rahman Ismail*

TESTED & RATED

8.0/10

HWM MALAYSIA

Available at

PLAZA LOW YAT

AT A GLANCE

Standards
HomePlug AV/AV2

Interface
Gigabit Ethernet, Power Socket

Range
300m (over electrical circuit)

Power Output to Integrated Socket
16A

Price
TBA

PowerLine Utility is an optional tool that helps you manage your network of extenders.

CONCLUSION

A simple plug-and-play solution that is easier, more secure, and faster than Wi-Fi.

SPECIFICATIONS
Encryption 128-bit AES // **Modulation Technology** OFDM (PLC) // **Power Consumption** Maximum: 6W (220V/50Hz), Typical: 6W (220V/50Hz), Standby: 0.5W (220V/50Hz) // **Protocols** IEEE1901, IEEE802.3, IEEE802.3u, IEEE802.3ab // **Plug Type** EU, UK // **Dimensions** 131 x 72 x 42 mm // **Contact** TP-LINK Distribution Malaysia Sdn Bhd / AdvancedNet Technology Sdn Bhd / M-Link System (M) Sdn Bhd // **Telephone** (03) 8964 1922 / (03) 8070 3633 / (03) 6143 0888 // **URL** www.tp-link.com.my

UNPACKING THE NEW GENERATION

Samsung's new Galaxy Note 5 and Galaxy S6 edge+ unveiled.

MORE INSIDE>

NEW GAMBLE
Qualcomm announced Snapdragon 820, 616, 412, and 212 SoCs.

G IS FOR GOOGLE
Google is now part of a new parent company, Alphabet.

NOT JUST VALUE FOR MONEY
We reviewed the Xiaomi Mi Note.

A VERSATILE TABLET
We gave Samsung's Galaxy Tab S2 a whirl.

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HOT SHOTS

HOW WE TEST

JOHN LAW

Mobile Adventurer Extraordinaire

Smartphones or tablets, it doesn't matter. When not occupied with watching a YouTube video or movie on his mobile devices, this man is busy trying some newly designed app from the Google Play Store or simply just chatting away on whatever social media app that is currently being used. On top of that, you can also see him making gestures at his desk while listening to classical music on his favorite radio app.

SMARTPHONES & TABLETS

When it comes to smartphones and tablets, we prefer letting our readers know how the devices we review appeal to us in terms of performance, design, features and other aspects such as battery life, usability and its overall value. To test these devices we replace them with our own daily use devices and use them as we would any smartphone or tablet.

As for Android based devices, we use a trio of benchmarks to gain a more tangible idea of their performance and these include:

• AnTuTu Benchmark: At the moment, AnTuTu is one of the best benchmarks as it is a complete package that gives us an all-round hardware test that includes the likes of Memory Performance, CPU Integer Performance, 2D and 3D Graphics Performance, SD Card Read/Write Speed and more.

• Quadrant Standard Edition: Ever since Quadrant was released, it has become a staple in the arsenal of smartphone and tablet reviewers as it provides a comprehensive set of tools that test the performance of a device's CPU, I/O and 3D graphics.

• Epic Citadel: We reserve Epic Citadel for devices that fall in the high-end and mid-range categories as this benchmark truly shows the capabilities of a device's GPU. Powered by the critically acclaimed Unreal Engine 3, Epic Citadel features effects such as Global Illumination, Dynamic Specular Lighting with Texture Masks, Vertex Deformation, Skeletal Animation, etc.

MOBILE NETWORKING

Mobile networking devices such as 3G/4G dongles and MiFi devices are fast becoming hot commodities as our appetite for data consumption continues to grow. Depending on the device type, here are the two tests we commonly use to gauge their performance:

• For devices capable of sending and receiving data packets such as a mobile router with a LAN port, we use our standard 1GB file transfer test at various ranges to see how stable and fast the connection is.

• As for devices that rely on a mobile operator's signal strength such as MiFi devices, we test them around the Klang Valley to provide you with a better picture of the service as a whole. For devices like these, we also rely on the Speedtest.net application or website to discover its Download, Upload and Ping rates.

ACCESSORIES

To gauge the performance and features of accessories such as docks, speakers, Bluetooth headphones and wired headphones, we use our standard audio testing suite which lets us know just how well a device handles music from different genres. We normally play audio tracks from various sources and in various formats but we usually rely on a few artists which include:

- **Yoko Kanno**
- **Joanna Wang**
- **John Mayer**
- **Jon Bon Jovi**
- **Nightwish**

If the device has a microphone or works as a speakerphone, we also test it by making actual phone calls. After all our tests, we then explore other areas such as stress-handling, usability, design and value.

APPLE MUSIC A BREAKOUT HIT

More Than 10 Million People Signed Up for Apple Music In First Month

Apple Music gained more than 10 million subscribers in just one month.

By now, you've no doubt heard (or read) about Apple's initiative to break into the world of music streaming via the Apple Music app. But what you may not know is that Apple's music streaming service was so widely anticipated by its community that more than 10 million users instantly signed up within the first month of its launch.

Needless to say, both Apple and the record labels that had signed on to the music streaming service were taken by surprise, having expected the service to take off slowly. While this may seem like a small number compared to the 75 million subscribers of Apple Music's direct competitor, Spotify, it's important to note that Apple managed to obtain 10 million subscribers in just over a month, while Spotify only managed to obtain those number of subscribers a little more than a year after it was founded in 2009.

During launch, Apple Music lets users take advantage of a free, three-month trial. Once the trial period is over, it is then up to the subscribers to choose whether or not they wish to pay for the service. If you happen to be one of these subscribers, you should know that Apple Music offers some unique features of its own, such as expert music recommendations (based on your musical preferences), access to the Beats 1 radio station, and last but not least, the ability to follow artists on Connect.

LONG LIVE GOOGLE+

Google+ Will No Longer be Needed to Access Google Services

Due to a lackluster performance on the web and user reluctance towards Google+, Google is finally acknowledging that its own social media service is not popular among the vox populi. While it has not been spoken about outright, Google has already made a great number of changes, the most important one being that Google+ will no longer hinder the operations of other Google-related services and apps.

To make a long story short, soon all that you'll need to access Google services and products is a Google account, and not a Google+ account. This decision means that users will be given more privacy, as Google account is not publicly searchable, unlike Google+ accounts.

The first application to benefit from this change is YouTube. YouTubers will soon be able to unlink their Google+ accounts from YouTube in the following months, but in the meantime, you'll still need a Google+ account in order to comment, upload videos, or create a channel. Google is also offering assistance for users to get rid of unwanted Google+ accounts, with better options for managing and removing profiles that may have been created a long while ago. The discontinuation also meant that Google+ Photos will also be merged into the recently launched Google Photos.

The changes aren't going to be immediate, as Google intends to roll them out over the coming months. So, don't be surprised if you noticed something different about the way some of your Google apps work.

BYTES

Kaspersky: Mobile Malware Grows Almost 3-Fold in Q2 2015

The latest reports from Kaspersky have shown that the number of mobile malware programs during the second quarter of 2015 has grown almost three times greater than it was back in the first quarter of 2015, with mobile banking still being the main target of these digital threats. The majority of these malicious web resources were determined by Kaspersky Lab to have originated from various locations within Russia. The company also discovered four cyber-espionage campaigns that targeted government agencies, commercial companies, and other high-level targets, while being on the lookout during the second quarter.

Trend Micro: 8 in 10 Malaysians Fear Loss of Personal and Financial Details

A recent online poll conducted by Trend Micro has shown that eight out of 10 Malaysians are skeptical about putting either their personal or financial details on the Internet, for fear of them being stolen. Trend Micro also discovered that many of the poll's respondents were vulnerable to cyber threats. "It's a fact of life that all laptops, smartphones, PCs and tablets are susceptible to data theft, and stealing information from one's digital life is easier than most people think," said Goh Chee Hoh, Managing Director of Malaysia, Singapore and Indonesia, Trend Micro Inc.

Nearly One Billion Android Devices Vulnerable to 'Stagefright' Exploit

Researchers at a company known as Zimperium have discovered a security exploit for Android devices known as 'Stagefright'. The exploit, which is delivered via a simple-looking, malware-riddled MMS video, is said to be able to give hackers a red-carpet access to any Android device afflicted with the bug. This allows the hacker to access various functions such as the camera, microphone, and even sensitive files that may be stored on your external storage. Mercifully, Android users can avoid from being affected by the exploit, simply by deleting the MMS video without opening it.

NEW GAMBLE

Qualcomm's New Snapdragon 820, 616, 412, and 212 Unveiled

The mobile world has yet again been blessed with new processors, as Qualcomm recently unveiled its latest high-end, mid-range, and entry-level SoCs.

Its high-end flagship SoC, the Snapdragon 820, has been anticipated for quite some time now, especially since the problems and controversies that surrounded its heat-plagued predecessor, the Snapdragon 810. Off the bat, the Snapdragon 820 will be fitted with the Adreno 530 GPU, Qualcomm's highest-performing GPU to date. In terms of performance numbers, the new GPU is designed to perform up to 40 percent faster and more efficiently than the previous Adreno 430 GPU. Another addition to the Snapdragon 820 SoC is the brand new Spectra camera dual-ISP. It's designed to provide superior image quality, and even supports the latest 14-bit sensors for a wider range of colors and more natural skin tones.

Qualcomm also announced a trio of entry-level and mid-range SoCs: the Snapdragon 616, 412, and 212. The Snapdragon 616 is the company's latest 64-bit octa-core chipset that possesses a new integrated X5 LTE capabilities, Full HD video capture and playback, and will even support advanced features such as hardware tessellation.

As for the Snapdragon 412 and 212, Qualcomm has stated that both these entry-level SoCs are updates to the previous-generation Snapdragon 410 and 210. Like the Snapdragon 616, the Snapdragon 412 is 64-bit capable, and is capable of supporting Full HD video capture and playback. With that being said, the Snapdragon 412 and 212 are still equipped with X5 LTE support, and have support for a 13MP and 8MP camera sensor, respectively.

Qualcomm's new SoCs include the Snapdragon 820, 616, 412, and 212.

UNPACKING THE NEW GENERATION

Samsung Announces the Galaxy Note 5 and Galaxy S6 edge+

Last month, Samsung announced not one, but two brand new flagship smartphones at its Unpacked 2015 event: the Galaxy Note 5 and the Galaxy S6 edge+.

Like the previous Galaxy Note models before it, the Galaxy Note 5 comes packed with a myriad of new features. It has a narrower bezel, which ultimately means more screen real estate for the phone's already-large 5.7-inch QHD display, and 4GB of LDDR4 RAM, a bump up from the previous Galaxy Note 4's 3GB RAM. On that note (no pun intended), the Galaxy Note 5 retains many of the features that first appeared in previous-generation models, such as Air Command, and the ubiquitous S-Pen. Along with the Galaxy S6 edge+, both the phones are also fitted with Samsung's new fast wireless charging technology, which promises to fully charge any of them in approximately 120 minutes.

The Galaxy S6 edge+, the second phone to be announced, is the newest addition to the Galaxy S series, and is also the first of the Galaxy S6 smartphones to possess a display bigger than 5.2-inches.

At the time of writing, Samsung announced that both the Galaxy Note 5 and the Galaxy S6 edge+ would be available by August 15, 2015. However, local pricing and availability have yet to be announced. Both models will come in 32GB and 64GB options, and the following colors: White Pearl, Black Sapphire, Gold Platinum, and Silver Titanium.

Meet Samsung's two new flagships, the Galaxy S6 edge+ and Galaxy Note 5.

Google is now part of a larger collective of companies, known as Alphabet.

G IS FOR GOOGLE

Google is Now Part of a New Parent Company, Alphabet

Google is no longer a standalone company, and has been restructured and brought under the umbrella of a new company: Alphabet.

The restructuring decision came from Google's founders, Larry Page and Sergey Brin, who made the announcement last month, and has named longtime programmer and former Chrome OS and Android chief, Sundar Pichai, as the new CEO to handle Google as a whole. This means that Sundar will not just be handling Google, but also its affiliated IPs, such as Google Search, Google Ads, Google Maps, Google Play, YouTube, and Android.

"This new structure will allow us to keep tremendous focus on the extraordinary opportunities we have inside of Google. A key part of this is Sundar Pichai. Sundar has been saying the things I would have said (and sometimes better!) for quite some time now, and I've been tremendously enjoying our work together," Larry wrote on his blog post. "Sergey and I have been super excited about his progress and dedication to the company. And it is clear to us and our board that it is time for Sundar to be CEO of Google."

The reorganization has involved significant financial restructuring, and has led to Google's ticker to be replaced with Alphabet's own acronym on the stock markets (mainly NASDAQ). This also means that all of Google's shares will now be traded as shares of the larger Alphabet holding company, which coincidentally saw its share price soar up to more than four percent at its announcement.

PayPal's value soared on the stock market after the company announced its split from eBay. (Image source: Huffington Post)

SINGLE AND FABULOUS

PayPal Sees Value Soar After eBay Split

PayPal and eBay are no longer partners. The U.S. online payment company has since promptly returned to the NASDAQ under the ticker "PYPL". While many financial analysts speculated a drop in its share value, the company surprised them when it reported its value at US$46.84 billion (approx. RM191 billion), almost 36 percent more than its former partner, eBay, who sat at a value of US$34.39 billion (approx. RM140 billion).

The soaring value of PayPal has led investors to believe that the reason for this increased value is due to a shifting trend of consumers making their payments through mobile devices, and that mobile space is a prime environment for companies like PayPal to thrive in.

For the longest time, PayPal has always been used as an alternative form of currency for online purchases and payments for PayPal. With the partnership dissolved, PayPal is now free to develop its online payment platform for other external services, such as Apple Pay or Google Wallet.

Dan Schulman, PayPal's President, has acknowledged the limitations that the company suffered whilst still in partnership with eBay, and that the company is now looking forward to work with other software developers and platforms.

If you're worried about losing a method for eBay, do not fret. PayPal will still be serving the eBay marketplace for the next six years, and both parties have an agreement that will ensure that roughly 80 percent of the gross merchandises sold on eBay will still run through the online payment portal.

IT'S ALL ABOUT SELFIES

Sony Xperia C4 Dual

AT A GLANCE

Network
4G LTE

Display
5.5-inch Full HD IPS

Camera
13MP (rear), 5MP (front)

OS
Android 5.0 Lollipop

Price
RM1,299

The soft LED flash automatically adjusts its intensity based on the lighting conditions for a pleasant selfie capture.

CONCLUSION

The Xperia C4 Dual performed just as well as we'd hoped for a selfie-centric phone.

SPECIFICATIONS
Processors 64-bit 1.7GHz octa-core MediaTek MTK6752 // **GPU** ARM Mali760 MP2 700MHz // **Memory** 2GB of RAM // **Storage** 16GB internal memory (expandable via microSD) // **Connectivity**3.5mm audio, Micro-USB 2.0, Wi-Fi, Bluetooth 4.1 // **Battery** 2,600 mAh // **Dimensions** 150.3 x 77.4 x 7.9 mm // **Weight** 147g // **Warranty** 1-year // **Contact** Sony Mobile Communications Int'l AB (Malaysia) // **Tel** 1 800 88 7666 // **URL** www.sonymobile.com/my

Since there's no stopping the selfie phenomenon, many smartphone manufacturers are placing extra emphasis on the advancement of imaging technology to deliver better image quality. One such company is Sony, where many of the recent Xperia smartphones are decidedly more camera focused. This extends to the Xperia C4 Dual, the latest midrange smartphone from Sony to sport the PROselfie moniker. Let's find out how it performs.

Despite being part of the midrange Xperia lineup, the Xperia C4 Dual boasts some impressive specifications. It's armed with a 1.7GHz octa-core MediaTek SoC, 2GB of RAM, runs on the latest Android 5.0 OS, while its 5.5-inch Full HD display looks just as good as your average flagship smartphone. After all, the IPS panel is complemented by Sony's Mobile BRAVIA Engine 2 technology for a wider viewing angle, improved contrast and optimized sharpness.

Having said that, the area where the Xperia C4 Dual does not hold up quite as well as the premium smartphones is its aesthetics. The device comes with a well-designed unibody plastic chassis, but it's a slight step down in quality compared to what Sony is capable of producing. Our review unit is predominantly white with matte silver finishing on the curved edges, which is, incidentally, a delight to hold and, more importantly, less prone to slipping from the hands.

As a selfie-centric phone, the Xperia C4 Dual is obviously fitted with decent imaging hardware. It comes equipped a slew of camera apps to take advantage of the rear 13MP camera and front-facing 5MP camera – the latter which boasts a 25mm wide angle lens, an Exmor R image sensor, as well as a soft LED flash previously seen on the Xperia C3. Apart from a wide range of scene modes and filters, the camera app also has an improved Superior Auto mode that will select the optimal settings for low-light selfies.

In terms of image quality, photos that were taken using the front-facing camera turned out well, with crisp details and fair color accuracy. The rear camera, on the other hand, captured reasonably detailed photos in most shooting environments. The inclusions of HDR and SteadyShot for video capture are also a nice touch.

Performance-wise, we ran our usual benchmark tests that include AnTuTu, 3DMark, Quadrant, PCMark, and Epic Citadel. The score garnered were 42,858, 321, 20,807, 2,925 and 43.1 fps, respectively. The overall performance was more or less in line with the other midrange smartphones today. During our time with the device, we didn't experience any lag when multitasking on the Xperia C4 Dual.

By *Ammar Uzair Aminuddin*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at
PLAZA LOW YAT

NOT JUST VALUE FOR MONEY

Xiaomi Mi Note

Xiaomi devices have always come with the association with being "wallet-friendly," for better or worse. The Mi Note launched earlier this year however, was the first device from the brand to go against the trend. Being priced locally at RM1,549, it is also the most expensive Xiaomi device to date. So how does that price bump manifest itself physically?

Unlike the plastic found on most other Xiaomi devices, the front and back of the Mi Note comes in glass. Specifically, curved Gorilla Glass 3. The curve might not be noticeable on the front as it is only slightly so, and at the very edges, but on the back, it's pretty obvious. This curve also strikes the ergonomic balance better than most; the curve at the edges makes it friendly to the palm, while the flat surface means it won't be wobbling about when you place the device on a table, because let's face it – you won't be keeping something of this size in your pockets when you sit down.

The rest of the edge is a plain-looking aluminum frame, with a 3.5mm audio port at the top, the speaker grilles and the Micro-USB port at the bottom, the power button and volume rocker on the right, and the SIM card tray that is pretty much hidden from plain sight. You need a pin to take it out, and after you do, you'll see that there's a slot for a Micro-SIM card, as well as a nano SIM card in there.

The UI is very simplistic, and very iOS-esque. Apps you'll find pre-installed are the bare basics, save for the usual suite of Google apps now commonly found in many smartphones. Also found inside, albeit on the hardware side of things, are an ESS ES9018K2M stereo digital-to-analog converter (DAC), dual ADI ADA 4896 op-amps, dual Texas Instruments OPA1612 op-amps, and two independent 44.1kHz and 48kHz clock oscillators. To put it simply, they mean superb sound quality when used with equally good headphones.

On to more measurable performance, the Mi Note scored 46,843 on AnTuTu, 24,463 on Quadrant, 20,800 on 3DMark's Ice Storm Unlimited, 4,682 on PCMark for Android, and an average of 56.9 fps running Epic Citadel on Ultra High Quality. It also lasted eight hours and 34 minutes on the battery life test on PCMark for Android, meaning it can help you with some pretty intense media tasks and won't conk out halfway through.

By *Ian Chee*

TESTED & RATED

9.0/10

HWM MALAYSIA

AT A GLANCE

Network
Dual 4G LTE

Camera
13MP f/2.0 (rear), 4 MP w/ 2-micron pixels f/2.0 (front)

Display
5.7-inch Full HD

OS
Android 4.4.4 KitKat with MIUI 6

Price
RM1,549

The Mi Note will last as long as you do in the office, even if you use it for the whole time you're at work.

CONCLUSION

When a Xiaomi device is not quite as "wallet-friendly" as before, it is immediately obvious why, and in a good way.

SPECIFICATIONS
Processor Qualcomm Snapdragon 801 // **Connectivity** 3.5mm stereo audio jack, Micro-USB, Wi-Fi IEEE 802.11 a/b/g/n/ac, Bluetooth 4.1 // **Memory** 3GB RAM, 64GB internal storage // **SIM Card Type** Micro-SIM, nano SIM // **Dimensions** 155.1 (L) x 77.6 (W) x 6.95 (H) mm // **Weight** 161g // **Battery** 3,000 mAh // **Warranty** 1-year // **Contact** Xiaomi Malaysia // **Telephone** 1 800 281 182 // **URL** www.mi.com/my

A SOLID EXPERIENCE

ASUS ZenPad 7.0 (Z370CG)

Part of ASUS' ZenPad series that was first unveiled during COMPUTEX 2015, the ZenPad 7.0 is the first to arrive here in Malaysia. How exactly does this phablet differ from the competition, and is it worth getting?

The ZenPad 7.0 is powered by a 64-bit, quad-core Intel Atom x3-C3230 processor, and is supported by 2GB of RAM and a Mali-450 MP4 GPU. Other specifications include 16GB of storage space, a 13Wh battery, and support for 3G networks.

When taking a look at the ZenPad 7.0, the best place to begin is the screen. It's got a 1,280 x 800 IPS panel and features what ASUS calls Tru2Life technology, which essentially is the use of "processing technology found on high-end TVs to deliver incredibly realistic images with accurate contrast, sharpness, and detail." There's also DTS-HD Premium sound technology onboard for better immersion.

Taking a look at the imaging capabilities of this device, it sports an 8MP rear camera and a 2MP front camera. There are a lot of modes to play around with, including HDR, Low Light, Beautification, Slow Motion, Time Lapse, and many more! Image quality isn't the best, but it's acceptable for a phablet of its class.

The thing that makes the ZenPad 7.0 unique though, is the ability to customize it. This phablet has a removable rear cover that can be swapped with a number of different cases. These cases are called Zen Cases, and can be found in different colors. Furthermore, there's the option to purchase the Audio Cover, which acts as a cover for the ZenPad 7.0, and has a 5.1-channel speaker system integrated. For those who want to make it a fashionable accessory, you can opt for the Zen Clutch, a wallet-like cover. Last but not least, is the Power Case, which adds about seven more hours of battery life.

As usual, we ran a number of benchmarks to determine just how much performance this device packs. First on the list is AnTuTu, where we got a score of 20,935, which is a score that could have been much better in this day of age. Moving on, in Quadrant, it scored 6,432, while in PCMark's Work Suite and 3DMark's Ice Storm Extreme benchmarks, it scored 2,394 and 3,562, respectively. Again, we've seen devices that perform well beyond these scores. Finally, in Epic Citadel, which was set at High Quality, we saw an average of 44.7 fps. In terms of battery life, PCMark's battery test puts it at about seven hours and 20 minutes on average.

Put simply, the ASUS ZenPad 7.0 is a respectable phablet. It's an entertainment-oriented device, so it makes sense to get this device if you're planning to use it to watch movies and listen to music.

By *Bryan Chan*

TESTED & RATED

8.0/10

HWM MALAYSIA

Available at

PLAZA LOW YAT

AT A GLANCE

Network
Wi-Fi / 3G

Camera
8MP f/2.0 (rear), 2.0MP (front)

Display
7.0-inch, 1,280 x 800

OS
Android 5.0 (Lollipop) with ZenUI

Price
TBA

The rear cover is removable. You'll find the SIM and microSD slots here.

CONCLUSION

The ASUS ZenPad 7.0 is an entertainment-oriented phablet that has a lot to offer, without breaking the bank.

SPECIFICATIONS

Processor 64-bit quad-core Intel Atom x3-C3230 // **GPU** Mali-450 MP4 // **Connectivity** 3.5mm stereo audio jack, Micro-USB, WLAN 802.11b/g/n, Bluetooth 4.0, Miracast // **Memory** 2GB RAM, 16GB internal storage (expandable via microSD) // **Colors** Black, White, Aurora Metallic // **SIM Card Type** Micro-SIM // **Dimensions** 189 (W) x 110.9 (H) x 8.7 (D) mm // **Weight** 272g // **Battery** 13Wh // **Warranty** 1-year // **Contact** Dynamics Distribution Sdn Bhd // **Telephone** (03) 8024 2100 // **URL** www.asus.com/my

A VERSATILE TABLET

Samsung Galaxy Tab S2 (9.7-inch)

While a tablet isn't considered an essential piece of equipment for some, it's definitely a nifty thing to have. Having one would let you read digital books with ease, watch videos without straining your eyes, and even let you do some work while out of the office. The Samsung Galaxy Tab S2 attempts to let you do all this, but does it succeed?

If you're familiar with the predecessors of this tablet, the first thing you'll notice is that Samsung has dropped the 16:10 aspect ratio for a 4:3 viewing area. The reason for this change is because Samsung wanted to make reading a more comfortable affair with this tablet. To this end, we really did find it easy to read online articles and digital books on this tablet, especially with Reading Mode enabled.

Like the Galaxy Tab S, there are two variants to the Galaxy Tab S2 – an 8.0-inch and a 9.7-inch. Compared to their predecessors, both models have gone on a diet, making them thinner and weigh less. The 8.0-inch is 272g, while the 9.7-inch is 392g. Both are 5.6mm thin. Thanks to this, you won't feel additionally burdened when you add either of these tablets into your backpack. For maximum portability though, the 8.0-inch gets our vote as the 9.7-inch can be slightly too large.

Feature-wise, this tablet is loaded. The screen has a resolution of 2,048 x 1,536 and makes use of Samsung's Super AMOLED technology. In addition, there's a fingerprint scanner integrated into the Home button, which is rather accurate, though it did fail to recognize a registered thumbprint on several occasions. Apart from that, Samsung is bundling a number of apps with the tablet, including Microsoft Office Solutions, which has Word, Excel, PowerPoint, OneNote, Skype, and OneDrive. There's also Samsung's Milk Music app and iflix.

When it comes to the numbers, we ran the new recommended benchmark from 3DMark, Sling Shot. In the OpenGL ES 3.0 version, it scored 998, which is relatively high. Apart from that, it scored 6,120 in PCMark's Work suite and 54,875 in AnTuTu. With Quadrant, it managed 29,773, which again is very high. Finally, in Epic Citadel at Ultra High Quality, the 9.7-inch Tab S2 managed an average of 46.6 fps, which is very respectable.

Put simply, the Samsung Galaxy Tab S2 is more than capable of supporting multimedia content, while doing some light work outside of the office. It's a versatile tablet in every sense.

By *Bryan Chan*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at

PLAZA LOW YAT

AT A GLANCE

Network
Wi-Fi / 4G LTE

Camera
8.0MP (Rear) / 2.1MP (Front)

Display
9.7-inch QXGA (2,048 x 1,536) Super AMOLED

OS
Android 5.0.2 (Lollipop)

Price
RM1,999

The Home button is integrated with a fingerprint scanner.

CONCLUSION

Light and powerful, the Samsung Galaxy Tab S2 can be used for both work and play.

SPECIFICATIONS

Processor Octa-core, up to 1.9GHz // **Multimedia Audio** MP3, M4A, 3GA, AAC, OGG, OGA, WAV, WMA, AMR, AWB, FLAC, MID, MIDI, XMF, MXMF, IMY, RTTTL, RTX, OTA Video: MP4, M4V, 3GP, 3G2, WMV, ASF, AVI, FLV, MKV, WEBM // **Connectivity** 3.5mm stereo audio jack, micro-USB, Wi-Fi IEEE 802.11 a/b/g/n/ac, Bluetooth 4.1 // **Memory** 3GB RAM, 32GB internal storage with expandable microSD slot (up to 128GB) // **Colors** Gold, White, Black // **SIM Card Type** Nano-SIM // **Dimensions** 169.0 (W) x 237.3 (H) x 5.6 (D) mm // **Weight** 392g // **Battery** 5,870mAh // **Contact** Samsung Careline // **Warranty** 1-year // **Telephone** 1 800 88 9999 // **URL** www.samsung.com/my

PHOENIX RISING

Garmin fēnix 3

Over the past two months, we were given the privilege to review two of Garmin's smartwatch-cum-fitness trackers: the vivoactive and the vivosmart – both of which we thought were very capable at doing what they were designed to do. And that could only mean that our expectations of the Garmin fēnix 3 that we have for review this month couldn't be any higher, because the fēnix 3 is, after all, Garmin's flagship wearable.

Unlike most fitness trackers, which are often compact by nature, the fēnix 3 takes pride in being one that's big and burly, thanks to its dark stainless steel bezel, and the fact that it's also two-inches wide, and slightly over half an inch thick.

As the flagbearer of Garmin's fitness smartwatch lineup, the fēnix 3 naturally comes equipped with all the sensors that Garmin could possibly pack it with, including a barometer, an altimeter, an electronic compass, and an ambient temperature sensor.

Like the rest of Garmin's fitness smartwatches, the fēnix 3 is capable of pushing most, if not all, of your phone's notifications.

The 1.2-inch daylight-readable color display of the fēnix 3 has a resolution of 218 x 218, which is sufficient enough for us to have a hard time discerning the individual pixels of the display. Sadly, the fēnix 3's display isn't one that's touch-enabled, which means you'll have to rely on the five chunky buttons located by its sides to navigate it.

Just like its siblings, the fēnix 3 excels at tracking the nitty-gritty details of your running, skiing, climbing, swimming, hiking and biking activities – which are all conveniently synced, logged and ready for your perusal on the accompanying Connect IQ app on your smartphone. Since our review unit came bundled with the fēnix 3's optional heart rate monitor, we decided to find out whether it's any good by strapping it around our chest and bringing it out for a quick jog.

But before we began, we prepped the fēnix 3 by putting it into the 'Run' activity tracking mode. After the fēnix 3's GPS locked onto our position – which literally took no more than five seconds while we were standing outdoors, we began our jog with the fēnix 3 keeping track of our distance, time, average pace, elevation gained, calories, temperature, along with a slew of other essential run-related statistics in the background.

The fēnix 3's heart rate monitor brings about an additional three new metrics for you to wrap your head around: vertical oscillation, ground contact time and of course, your heart rate. While it works perfectly fine, it's a shame that it's not fitted onto the watch itself like how the Fitbit Surge's is.

Depending on your usage, charging the fēnix 3 shouldn't be anything more than a weekly affair. This is very impressive, considering that the vivosmart and the vivoactive only lasted slightly more than a week when we used them for the exact same purpose.

by *Peter Chu*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at PLAZA LOW YAT

AT A GLANCE

Wireless Sync
Yes

Battery Life
Up to 50 hours (UltraTrac mode), 20 hours (GPS training mode), 6 weeks (Watch mode)

Display
1.2-inch transflective MIP color

Display Resolution
218 x 218 pixels

Price
RM2,200

The Garmin fēnix 3 works best when it's paired with its optional heart rate monitor.

CONCLUSION

The Garmin fēnix 3 is hands down one of the best looking and performing fitness smartwatches you'll find today.

SPECIFICATIONS
Bluetooth Bluetooth 4.0 LE // **Battery** Rechargeable 300mAh Li-ion // **Input** Physical buttons // **Weight** 82g // **Warranty** 2-years // **Contact** AECO Technologies (M) Sdn Bhd // **Telephone** (03) 9285 8062 // **URL** www.garmin.com

TAP FOR GALLERY

BEATS AND AFFIRMATIONS

Jabra Sport Coach

Music is a good source of motivation to give you that extra push when working out. For some, however, mere beats pumping through their ear canals isn't quite enough; they require encouragements, such as personal coaching, to be motivated enough to keep to a workout plan. For those who are so inclined, there is the Jabra Sport Coach.

Of course, these wireless earphones don't provide you with the virtual coach themselves; there is an app for that: the Jabra Sport Life app. But before we go into that, let's take a closer look at the Sport Coach itself.

Essentially, what you have is a pair of in-ear buds that are IP55-rated, ensuring that it survives a drenching in sweat or rain, or even the slight rinsing that it may require immediately after. It comes with ear hooks as well to make sure that they stay in position despite the movement bursts that is an integral part of workouts. These come in three sizes, while the buds themselves come in four. They're all interchangeable and bundled into the box, with the addition of a small case to carry them all around with you.

The Sport Coach connects via Bluetooth and NFC, so there won't be any wired mess between them and your phone getting in the way of you and your workout. The controls and the NFC tag are both on the module near the right earpiece, while a button on the left earpiece sees use only when connected to the Sport Life app.

The help of the app is how the Sport Coach will achieve its full raison d'être. From the app, there's a list of workouts for you to pick and choose, and when you've gotten your list all set up, you'll get a 'coach' guiding you through the exercise routines, telling you how much time is left before a set ends, and how much time of rest you have before you need to get started on the next one. If you're a runner type of person, then you'll have the data recorded by the accelerometer in the earphones displayed on the app. That said, you might want to consider against using it while running outdoors, due to the nature of in-ear earphones.

In terms of music, its sound quality is good, but if you listen closely (not something you'll likely do during workouts), you'll notice slight details missing from your tracks. Battery life is stated to be 5.5 hours, though in actual use, you'll probably be getting slightly less than five, probably less if you somehow have a 5-hour workout routine. Charging, on the other hand, is easily done via Micro-USB, and takes little over an hour.

By *Ian Chee*

TESTED & RATED

8.5/10

HWM MALAYSIA

Available at

PLAZA LOW YAT

AT A GLANCE

Type
Bluetooth Sports In-Ear Headphones

Standby Time
10 days

Music Playtime
5.5 hours

Frequency Response
20-20,000 Hz

Price
RM649

Bundled accessories include different-sized buds and hooks, as well as two cable clips.

CONCLUSION

For all the beats and haranguing you'll need to keep to your workout routine, there's the Jabra Sport Coach.

SPECIFICATIONS
Impedance 16 ohms // **Sensitivity** 94 dB // **Drivers** 6mm // **Warranty** 1-year // **Contact** Mobile Dot Com Network Sdn Bhd // **Telephone** (03) 6257 0925 // **URL** my.jabra.com

FACEBOOK'S EXPANDING WINGSPAN

The Aquila Internet Plane Resembles a Stealth Bomber

Sometime back in an earlier issue, we reported briefly on how Facebook had plans on providing free Internet with laser technology to the entire world. The method of delivery for laser-based Internet that the social media giant had chosen was through the Aquila: a solar-powered drone that could stay in the air for months on end. The drone was the subject of interest in many circles, and up until today, no one had ever seen what the Aquila really looks like, with the exception of concept images.

Last month, Facebook released some official photographs of the Aquila, and quite honestly, it looks amazing.

You can see just how large and stealth bomber-like the Aquila looks just from the photo.

Shaped to look like a stealth bomber, the V-shaped drone has a wingspan of a Boeing 737, which gives you an indication as to just how big the aircraft is. However, despite being wide, the Aquila will only weigh anywhere between 400kg and 460kg (that's roughly half the weight of a Perodua Kancil), and that's with all its communication gears loaded up inside.

"When deployed, it will be able to circle a remote region for up to 90 days, beaming connectivity down to people from an altitude of 18km (60,000 feet) and 27.4km (90,000 feet)," the company stated on its official blog. This essentially means that, like a commercial aircraft, the Aquila will be able to fly above that of a commercial aircraft, as well as the weather, ensuring that the drone can avoid natural phenomena, such as lightning storms.

DRAGON REBORN

SpaceX and Boeing Create Commercial Crew Program for Safer Flights for Astronauts

Despite the blunder of SpaceX's exploding Falcon 9 rocket (the cause of the explosion was due to a faulty steel strut), the company's CEO, Elon Musk, isn't just about to give up on his dreams of making space travel affordable and safer for the masses. In fact, Elon has reached out to private aeronautical corporation, Boeing, in order to develop several new transportation modules that will ultimately be able to ferry NASA astronauts to and from the International Space Station (ISS).

It's the first time that the space agency has entrusted the lives of their astronauts to a private company. Not surprisingly, there is a catch to NASA giving both SpaceX and Boeing the rights to develop the Commercial Crew Program. The space agency is holding both companies to the same high standards that it did for its space shuttle missions, meaning that they must meet a few hundred pre-defined safety requirements, and even prove that their new designs would keep the astronauts alive, even as the rocket carrying them falls apart. Beyond that, NASA has said that they won't be having much say in the design of the vehicle.

NASA has outsourced the design of its Commercial Crew Program to SpaceX and Boeing.

But even with all those requirements, NASA is not demanding that SpaceX and Boeing achieve 100 percent reliability. To be precise, the percentage that they're expecting the two companies to aim is merely 99.6 percent (which really isn't by much, in our honest and humble opinion).

gx

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NEWSWIRE
TEARAWAY UNFOLDED,
MIGHTY NO. 9,
AND MORE!

REVIEWS
KING'S QUEST,
ULTRA STREET FIGHTER IV,
THE SIMS 4: SPA DAY

BEST OF GAMESCOM 2015

A JOURNEY UNFOLDED

Tearaway Unfolded to be Released for PS4 on September 8, 2015

Contrary to what most of you might be thinking, not all games require bucketloads of bloodshed and carnage in order for it to be captivating. Take the upcoming *Tearaway Unfolded* as an example – it's a vibrant and lighthearted 3D-animated platformer that's set in the papier-mâché town of Sogport, where players will be taking control of envelope-shaped messenger, Iota, or his female counterpart, Atoi. Their mission – as their envelope-shaped appearances would already suggest – is to deliver themselves to the intended recipients.

If you're wondering why the game's title is so oddly familiar, it's because *Tearaway Unfolded* is actually the PS4 port of the original BAFTA award-winning game, Tearaway, which was released back in 2013 for the PS Vita. But don't worry, the PS4 version of the game will have quite a number of improvements in tow, including a new control scheme, brand new areas, 60 fps gameplay, and of course – the ability to play the masterfully designed game in Full HD (1,920 x 1,080).

Not only that, players will also be able to use the PS4's DualShock 4 controller to interact with the game as well. For example, by performing a perfectly-timed swipe on the DualShock 4's touchpad, players will be able to cast ferocious gusts of wind to hold back enemies, or manipulate the game's environment by pointing the DualShock 4's light bar towards the TV.

Tearaway Unfolded will be available for purchase in both physical and digital formats during its official launch day on September 8, 2015 for RM139 and RM125, respectively. PS Plus members, you'll be given a 10-percent discount if you purchase the game between September 8 and 28.

On the other hand, players who pre-order the game between August 14 and September 5 will receive an adorable plush toy of the game's male protagonist, Iota, as a special pre-order premium – while stocks last.

READY TO MINGLE

The Sims 4: Get Together Expansion Pack to be Launched on PC and Mac in November

It would be highly unorthodox if *The Sims* didn't come with an abundance of expansion packs in tow, now wouldn't it? In keeping with the tradition, Electronic Arts has announced a new expansion pack for *The Sims 4* during its gamescom 2015 press conference, called *The Sims 4: Get Together.*

The unveiling of *The Sims 4: Get Together* expansion pack comes four months after the game's first expansion pack, *The Sims 4: Get to Work*, which was launched back in April of this year.

The highlight of *The Sims 4: Get Together* expansion pack is the new European-inspired world called Windenburg, where players will find unique attractions such as the vast hedge maze at the garden chateau, and the picturesque pools along the bluffs. Additionally, *The Sims 4: Get Together* will also bring about new activities for your Sims and their friends to engage in, such as swimming in lakes, and playing foosball.

But for the most part, the main intention of the upcoming Get Together expansion pack is to get your Sims socializing by having them to pay a visit to the newly implemented clubs – each featuring a set of Sims that have unique personalities, traits, and interests. According to an interview with the game's producers, Lyndsay Pearson and Rachel Franklin, each of the in-game clubs will embody a specific theme, like a kids club, foodie club or a fitness club, as an example. It goes without saying that players will also have the freedom to create and customize clubs for their Sims as well.

Apart from the new clubs, there will also be plenty of new venues for Sims to get together (pardon the pun) at, including cafés, pubs and discos, where players will also be able to develop new skills such as DJ-ing and dancing.

The Sims 4: Get Together expansion pack is currently available for pre-order in both physical and digital formats and will be officially launched in November.

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AXN

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EXPLOSIVE SEPTEMBER
WITHIN 12HRS OF U.S.

AXN (Ch 701) is available on Astro and in HD (Ch 721).
To upgrade, tune in to Astro Service Portal on Ch 200 or visit www.astro.com.my

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RISE, LORD VADER

Limited Edition Darth Vader-Themed PS4 Bundles Announced for November

With the launch of *Star Wars Battlefront* and *Star Wars: The Force Awakens* fast approaching, it is genuinely only a matter of time before companies like Sony and Disney decided to capitalize on the momentum by releasing some form of product tie-in – which is where the two new Darth Vader-themed PS4 bundles comes in.

The first of the two bundles is the *Star Wars Battlefront* PS4 bundle, which as its name would already suggest, will come complete with a copy of the *Star Wars Battlefront Deluxe Edition*, as well as a digital voucher that can be used to download four classic *Star Wars titles: Super Star Wars, Star Wars: Racer Revenge, Star Wars: Jedi Starfighter,* and *Star Wars: Bounty Hunter.* Of course, it goes without saying that the bundle will also come with the all-important Darth-Vader-themed PS4 console (CUH-1200 series), and a restyled DualShock 4 controller that has been designed after Darth Vader's chest panel.

The second bundle is the *Disney Infinity 3.0: Star Wars* PS4 bundle, which will be sold exclusively through Walmart. Inside, you'll find the same Darth-Vader themed PS4 and DualShock controller as the *Star Wars Battlefront* bundle, but instead of being given a copy of *Star Wars Battlefront,* you'll instead be receiving a physical copy of *Disney Infinity 3.0,* the Disney Infinity Base, the Rise Against the Empire Play Set Pack (featuring Luke Skywalker and Leia Organa figures, as well the Rise Against the Empire Play Set piece), and the Boba Fett figure (a PS4 exclusive).

Whether these two bundles will arrive on our shores remains to be seen, but seeing that most of the limited edition PS4 bundles on the market are almost always made available locally, the outlook seems to be pretty good. Prices for both the bundles haven't been announced as of yet, but as with all things 'Limited Edition', you can probably expect to pay slightly more for these Star Wars PS4 bundles than you would for a standard 500GB PS4 console.

THE MIGHTY SETBACK

Mighty No. 9's Release Date Pushed Back to Q1 2016

Here's a classic example of why you shouldn't be funding or paying for games that have yet to see the light of day. Despite successfully raising more than US$3.8 million (approx. RM15.3 million) on Kickstarter – more than four times its US$900,000 (approx. RM3.63 million) funding goal – *Mega Man* creator Keiji Inafune's highly-anticipated comeback game, *Mighty No.9*, is nevertheless being delayed (again) for a Q1 2016 release at the earliest.

"We are unable to confirm a final release date at this time, however we will be aiming for a release in Q1 2016," said Mighty No.9 developer, Comcept, in a lengthy update posted on the game's Kickstarter page. "Once a solid release date is set, we will announce it immediately to our backers and fans," it read.

This marks the second time that *Mighty No.9* has been delayed; Inafune's 2D side-scrolling action game was originally slated for an April 2015 launch, but was pushed back to mid-September at the very last minute.

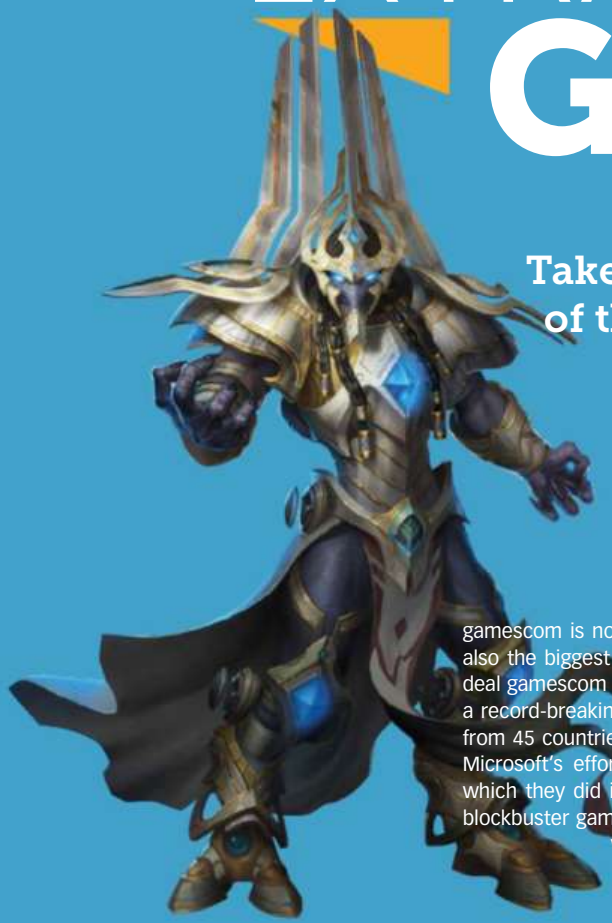
"We feel your pain, but the wait would hopefully pay off in the end, as the game has been delayed at the very last minute to address the bugs that are plaguing the online features of the game," said Comcept.

"All of the core content for the game is developed and in a complete state, however, there are still bugs and issues pertaining to the online features that are included in the game. These bugs and issues have a direct affect on enjoyment of the game, so a decision was made to work these issues out before release," they said.

"Currently, Comcept and their partners are working at full capacity to resolve these issues and fix any remaining bugs," they added.

Whether or not *Mighty No.9* will meet its new Q1 2016 deadline remains to be seen. If you funded the game back in 2013 and have been patiently waiting to sink your teeth into it ever since, your best course of action now would probably be to sit tight a little longer, and have your fingers and toes crossed until the newly proposed D-Day comes.

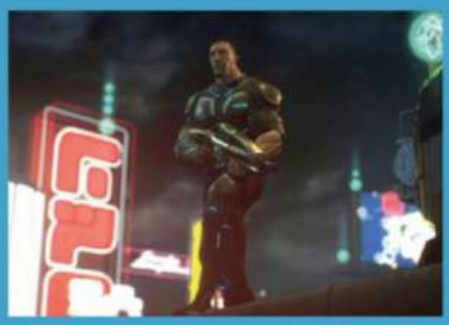
THE LEAGUE OF EXTRAORDINARY GAMES



Take a Closer Look at Some of the Captivating Games of gamescom 2015

By *Peter Chu*

gamescom is not just the largest video game trade fair in Europe – it is also the biggest one in the world. To give you an idea of just how big a deal gamescom is, just take a look at last month's gamescom, which had a record-breaking 345,000 visitors from 96 countries, and 806 exhibitors from 45 countries. The highlight of this year's gamescom was inarguably Microsoft's effort to compensate for its lackluster E3 2015 showcase, which they did in the best possible way – by unleashing a truckload of blockbuster games. If you thought E3 2015 was exciting, wait till you see what gamescom 2015 had up its sleeves.



CRACKDOWN 3

Genre: Action-Adventure, Third-Person Shooter
Developer: Reagent Games, Cloudgine
Publisher: Microsoft Studios
Platform: Xbox One
Release Date: Q3 2016

There are only a handful of games out there that features destructible environments, but none of them does it better than *Crackdown 3* does. In *Crackdown 3*, literally everything that you set your gun's sights on can be brought to ruins – all you need to do is hold down the fire button long enough. Not much of the game's storyline has been revealed thus far, but the fact that you are able to single-handedly (or together with your friends in multiplayer) decimate the entirety of *Crackdown 3's* futuristic city should already be more than enough to pique your interest.

DARK SOULS III

Genre: Action RPG
Developer: From Software
Publisher: Bandai Namco Entertainment
Platform: PC, PS4, Xbox One
Release Date: Q1 2016

If you weren't mentally tortured enough while playing the brutally-challenging *Dark Souls* and *Dark Souls II*, you'll be glad to know that *Dark Souls III* will be launched early next year to torment you even more. Judging from what we can gather from its two-minute long gameplay video, *Dark Souls III* is going to feature more grotesque looking monsters, and bosses that are bigger and badder than ever before. In fact, the game is so unforgiving, that during an interview with Polygon, Hidetaka Miyazaki, *Dark Souls* series creator, mentioned that some of the game's challenges will make players exclaim "Oh, my god" over and over again.

HALO WARS 2

Genre: Real-Time Strategy
Developer: Creative Assembly, 343 Industries
Publisher: Microsoft Studios
Platform: PC, Xbox One
Release Date: Q3 2016

Amidst the slew of new games that were being demoed on stage, Microsoft took the opportunity to announce that they were indeed working on *Halo Wars 2*, but left much of its features and gameplay to our imagination. On the bright side though, a special post on Xbox Wire revealed that *Halo Wars 2* will be combining fast-paced action with massive battles and actual real-time strategy mechanics. Not only that, there will also be a 'robust, story-driven campaign' and plenty of multiplayer action as well. Sadly, the game's storyline is still being kept under wraps.

HOMEFRONT: THE REVOLUTION

Genre: First-Person Shooter, Open-World
Developer: Deep Silver Dambuster Studios
Publisher: Deep Silver
Platform: PC, PS4, Xbox One
Release Date: 2016

Homefront: The Revolution is set in Philadelphia in the year 2029 – four years after the United States were invaded by the ruthless North Korean military. Naturally, players will be leading the resistance movement in *Homefront: The Revolution*, as they try to restore freedom back into Philadelphia, the state that was once known for being a staunch advocate of freedom. But to do so, they'll first need to master the art of guerilla warfare, which includes the stealthy acts of ambushing, sabotaging, infiltrating and deceiving. Going all out with guns blazing is a sure-fire way of getting yourself killed.

QUANTUM BREAK

Genre: Action, Third-Person Shooter
Developer: Remedy Entertainment Dambuster Studios
Publisher: Microsoft Studios
Platform: Xbox One
Release Date: April 2016

Quantum Break was the highlight of Microsoft's showcase at gamescom 2015, simply because the gameplay video that was showcased was chock-full of time-stuttering, action-packed goodness. The concept of time plays a pivotal role in *Quantum Break*, as the game's plot revolves around a time travel experiment going horribly awry, resulting in the game's protagonist, Jack Joyce, being able to bend and warp time whenever he pleases. Imagine then, how visually delightful it would be to witness cataclysmic explosions and rapid gunfire happening in delicious time-stopping gameplay.

SCALEBOUND

Genre: Action RPG
Developer: Platinum Games
Publisher: Microsoft Studios
Platform: Xbox One
Release Date: Q4 2016

In *Scalebound*, players are tasked to protect the lush, beautiful, but treacherous world of Draconis from being overrun by enemy soldiers and larger-than-life beasts. The good news is you won't be doing it single-handedly, as you would have an equally gargantuan-sized dragon, Thuban, as your ally. As the game progresses, you will be able to upgrade Thuban's attacks, abilities, and appearance to make him decidedly more imposing than he already is. Huge fire-breathing dragons and picturesque battlefields – what's not to like?

2K GAMES

MAFIA III

Genre: Action-Adventure
Developer: Hangar 13
Publisher: 2K Games
Platform: PC, PS4, Xbox One
Release Date: 2016

Mafia III is set in 1968, and will revolve around the story of Lincoln Clay – a half-black, half-white disenfranchised Vietnam War veteran who's just trying to seek solace in a reimagined New Orleans where corruption thrives, and organized crime is a part and parcel of everyday life. Lincoln eventually finds the comfort he longs for within the city's "Black mob", who were murdered in cold blood soon after by the Italian mafia. After surviving and recovering from the attack, Lincoln only has one thing on his mind: vengeance.

XCOM 2

Genre: Turn-Based Strategy
Developer: Firaxis Games
Publisher: 2K Games
Platform: PC
Release Date: November 2015

Set 20 years after the events of *XCOM: Enemy Unknown*, the sequel is all about humanity coming together as one to eliminate the aliens that have occupied Earth. *XCOM 2* places a huge emphasis on tactical guerilla combat, which is not all that surprising since you are going to be venturing into enemy territory. Apart from the new stealth-oriented combat mechanics, there will also be five new classes to choose from: the Sharpshooter, Specialist, Grenadier, Ranger, and one final class that Firaxis will only reveal as the game's launch day approaches.

BLIZZARD

STARCRAFT II: LEGACY OF THE VOID

Genre: Real-Time Strategy
Developer: Blizzard Entertainment
Publisher: Blizzard Entertainment
Platform: PC
Release Date: Q4 2015

The third and final installment of *StarCraft II* is finally here to fill the void in your hearts. The highlight of *StarCraft II: Legacy of the Void* is most definitely the new single-player campaign, which would not only be focusing on the Protoss, but will also serve as the conclusion to the long-running story of *StarCraft*. Apart from that, two new multiplayer modes will also be introduced, called the Archon mode – where two players will share control of a single base – as well as Allied Commanders mode – in which players will take control of one of *StarCraft II's* many commanders to complete objectives as a team.

WORLD OF WARCRAFT: LEGION

Genre: MMORPG
Developer: Blizzard Entertainment
Publisher: Blizzard Entertainment
Platform: PC
Release Date: TBA

World of Warcraft: Legion is the sixth expansion set of the immensely popular *World of Warcraft* MMORPG series. It goes without saying that along with the expansion comes an abundance of nifty new features, including a total of nine new dungeons, a new PvP talent system, a new lineup of special weapons called artifacts, and a new level cap of 110. Last but not least, the Legion expansion set also brings about an entirely new playable hero class: the Demon Hunter.

ELECTRONIC ARTS

FIFA 16

Genre: Sports
Developer: EA Canada
Publisher: EA Sports
Platform: PC, PS4, Xbox One, PS3, Xbox 360, iOS, Android
Release Date: Q3 2015

Good news, football fanatics: EA's definitive football game is back for a new season. As you would expect, *FIFA 16* comes with plenty of new features in tow, including a career mode that has been made more comprehensive, thanks to the inclusion of pre-season tournaments and the Player Training feature. Another major highlight of *FIFA 16* is the fact that it will be the first game in the *FIFA* franchise to feature female players from a total of 12 different international teams.

NEED FOR SPEED

Genre: Racing
Developer: Ghost Games
Publisher: Electronic Arts
Platform: PC, PS4, Xbox One
Release Date: November 2015

This year's *Need for Speed* reboot is geared to be the most realistic one yet, both graphically and in terms of gameplay. And we say so because the game will feature characters that are based on actual automotive icons and car culture heroes, including Ken Block, Magnus Walker, Nakai-san, Risky Devil, and Morohoshi-san – each of them featuring their own unique set of challenges that you will have to complete in order for you to earn their respect, and become the ultimate racing icon.

ROAD TO KNIGHTHOOD

King's Quest – Chapter 1: A Knight to Remember

AT A GLANCE

Genre
Adventure

Developer
The Odd Gentlemen

Publisher
Sierra Entertainment

Platform
PC, PS4 (Tested), PS3, Xbox One, Xbox 360

CONCLUSION

As far as retelling goes, the new King's Quest is a splendid return to form for the beloved series.

TESTED & RATED

9.0/10

HWM MALAYSIA

THE LEGEND RETURNS

The resurgence of adventure games in recent years can be attributed to many factors, but chief among them was the increased prevalence of digital distribution – a mean for smaller game developers to self-publish their games on platforms like Steam and GOG.com. The revival of once-dormant IPs naturally led to remakes of classic games (*Gabriel Knight: Sins of the Fathers 20th Anniversary Edition*) and even sequels for games that ended with unresolved cliffhangers (*Dreamfall Chapters: The Longest Journey*), but none were long overdue for revisiting as the *King's Quest* series from Sierra Entertainment.

For the uninitiated, the *King's Quest* series enjoyed tremendous popularity during the height of point-and-click adventure games, with each installment upping the ante visually and building on the puzzles and storytelling approach of the past. By the time the series jumped on the 3D action-adventure bandwagon with *Mask of Eternity* in 1998, Sierra was already sold and changed hands a number of times, eventually dissolved and revived as Sierra Entertainment under Activision Blizzard last year to re-imagine King Graham's early adventures with the help of The Odd Gentlemen. Is it worth the 17-year wait? The answer is a resounding yes!

GRAHAM, WATCH OUT!

The first thing you need to know about the new *King's Quest* is that it's meant to complement the existing lore by filling in the gaps between the (slightly retconned) canonical entries with the untold adventures of Graham's past. As with most epic tales, the game's first chapter begins in media res, re-imagining the dragon encounter from *King's Quest* I as a tutorial of sort to give players a glimpse of the puzzle-solving and action elements that are to come. Some may be put off by the fast-paced QTE sequence in the first half hour, but rest assured that the bulk of the chapter features some genuinely fun gameplay moments as the young and highly impressionable Graham competes in a three-part challenge for a knighthood to prove himself worthy to join the ranks of the Knights of Daventry.

A Knight to Remember is charmingly presented in a gorgeous, hand-painted art style that brings the fairytale whimsy of Daventry and its colorful cast of characters to life. The writing is sprinkled with light humor and is not above pun-filled quips in keeping with the series' tradition. It also helps that the voice acting duties are handled by the likes of Christopher Lloyd, Wallace Shawn, Josh Keaton, and Zelda Williams. The choices Graham makes – be they puzzles or dialog options – will have immediate and later repercussions, much like the Telltale games, though there's a lot more room for exploration, including alternate paths and silly deaths (to instant reload from) that encourage replayability. It took us about six hours to complete, marred slightly by unskippable conversations and cutscenes. The wait for the remaining four chapters (and epilogue) will be a tough one, that's for sure.

by *Michael Low*

ULTRAVIOLENCE

Ultra Street Fighter IV

AT A GLANCE

Genre
Fighting

Developer
Capcom, Dimps, Other Ocean Interactive (PS4)

Publisher
Capcom, Sony (PS4)

Platform
PC, PS4 (Tested), PS3, Xbox 360

CONCLUSION

A highly-replayable USFIV rerelease that could've been a lot more polished from the start.

AN OMINOUS START

By now, you must've already heard how the PS4 version of *Ultra Street Fighter IV* was pulled from Evo 2015 and Capcom Pro Tour for introducing an alarming number of bugs and performance issues in what was supposed to be the definitive edition of the game. The port, which was worked on by Other Ocean Interactive and published by Sony's Third Party Production group, launched riddled with visual anomalies, audio glitches, sluggish menus, and input lag, among other issues.

When word got out of the bug-ridden release, Capcom and Sony quickly went to work on fixing the game, resulting in two successive updates one week after the other. The good news is, much of the glaring problems from the initial release were resolved in the 1.03 update – in time for the game's digital release in our part of the world. The fixes include overall improvement in terms of addressing graphical glitches with specific character attacks, audio balancing, menu transitions, and online matchmaking, as well as further reduction in input latency. Is this a case of 'too little, too late' for *Street Fighter* fans? It depends on what you want out of this PS4 port.

THE LONG ROAD

As the third and final update to the six-year-old *Street Fighter IV,* the game introduced the obligatory balance changes, along with five additional characters (four of whom crossovered from *Street Fighter X Tekken*), six 'new' stages (also originating from *SFxT*), and a number of new fighting mechanics. Double Ultra allows players to unleash both Ultra Combo 1 and Ultra Combo 2 at the cost of reduced damage, while Red Focus absorbs multiple hits at the cost of your Super Meter, but it fills up the Ultra gauge faster than the regular Focus attacks. There's also Delayed Wake-up, where the character takes a couple more frames to get back on his/her feet to confuse the attacking opponent.

The inclusions of Omega Mode, originally a free DLC that remixed characters with new moves and properties (some good, some unnecessary), and Edition Select, which lets you pick earlier iterations (vanilla *SFIV, SSFIV, Arcade Edition, v2012*) of your favorite characters against friends in offline play, further fuel your dream Street Fighter mashups. Rounding up the USFIV experience is the inclusion of every previously-released DLC costumes, including the recent animal-themed 'Wild' and summer-filled 'Vacation' costume packs. With the UE4-powered *Street Fighter V* set to arrive exclusively on PS4 and PC in March next year, this feature-packed incarnation of *Ultra Street Fighter IV* would've been the perfect sendoff to the very game that rejuvenated the fighting game genre, if only it wasn't rushed out of the door with its share of hiccups and problems.

by *Michael Low*

It's OVER 9000!!!

TESTED & RATED

7.5/10

HWM MALAYSIA

LIFE IS ZEN

The Sims 4: Spa Day

HEALTH AND WELLNESS

Is the stress of Get to Work making your Sims feel overwhelmed, easily irritable and burnt out? Well, why not give them the gift of relaxation with *Spa Day*? That's right, the second Game Pack for *The Sims 4* introduces a new Spa venue, new interactions, and a new Wellness skill that your Sims can develop through yoga and meditation – with surprising results. Unlike *Outdoor Retreat,* which adds Granite Falls as a new destination, *Spa Day* provides three Maxis-made spas and a new gym building that you can plop right into your favorite neighborhood, but you can also build one from scratch.

MIND-BODY BALANCE

After a quick phone call to your spa of choice, your Sims can opt to attend yoga classes, receive massages (hand, foot, or full body), or simply unwind in the sauna room. For those who wish to bring the experience home, the Buy mode includes the option to purchase yoga mats, meditation stools, as well as massage chairs or tables. Furthermore, bathtubs now offer soothing bath soaks and mud baths – the latter which will result in a dirty tub. Other additions are in the form of new hairstyles, clothing options, and a handful of new furniture and objects.

by *Michael Low*

AT A GLANCE

Genre
Life Simulation

Developer
Maxis, The Sims Studio

Publisher
Electronic Arts

Platform
PC

CONCLUSION

Spa Day lets you pamper your Sims in fun, new ways.

TESTED & RATED

8.0/10

HWM MALAYSIA

THE FINAL FAREWELL

DEEMO: The Last Recital

CAPTIVATING CONCERTO

An enhanced PS Vita port of the original rhythm game for iOS and Android, *DEEMO: The Last Recital* is a gem that puts one of the most versatile musical instruments ever – the piano – in the spotlight, as opposed to assigning random keys of random instruments into a song/stage as most rhythm games do. Amateur musicians may feel like picking up the piano as a second instrument, and pianists with sharp eyes and ears may be able to get the scores of the songs used in the game just by playing them.

TOUCHING HEARTS WITH TOUCH-ONLY CONTROLS

The original DEEMO for iOS and Android featured a short and simple, yet powerful and tear-jerking story that made the game unique and drove players to keep playing until the finale. The same story is back, being much more heavily animated – further enhancing the emotions behind every scene. There is also a short follow-up that explains the paradox that is present throughout the original story, with its own set of songs and musical pieces. Also present in this Vita version are the Duel and Duet multiplayer modes.

by *Ian Chee*

AT A GLANCE

Genre
Rhythm

Developer
Rayark Games

Publisher
Rayark Games

Platform
PS Vita (Tested), iOS, Android

CONCLUSION

The rhythm game that's sure to tug at your heartstrings as it would your interest to play an actual piano.

TESTED & RATED

9.0/10

HWM MALAYSIA

aperture

September 2015 Vol 8 Issue 1

TEST

Is GoPro HERO4 Session ready for action?

NEWS

See darkness in a new light with Canon's new ME20F-SH

GOPRO IS IN SESSION

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Our verdict on Big Balance's Husky HY3M.

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Welcome Back, Infrared!

Infrared photographers rejoice, as FUJIFILM recently introduced a camera that is purpose-built for infrared photography, known as the FUJIFILM X-T1 IR. As its name suggests, the camera is based upon the respected X-T1 and shares many of its specifications. On top of that, Canon also introduced the ME20F-SH, a multi-purpose camera with ISO sensitivity of up to 4,000,000, while Nikon unveiled three additional lenses to its AF-S NIKKOR lineup.

As for reviews, we are among the first in Malaysia to test the newly-launched GoPro HERO4 Session, along with Big Balance's 3-axis handheld gimbal stabilizer, the Husky HY3M.

For any comments or feedback, you can always head on over to forums.hardwarezone.com.my and share your thoughts with us.

Ammar Uzair Aminuddin
HWM Malaysia

aperture uses the **ASUS ProArt PA238Q monitor** for all its image editing and viewing

ASUS

SHOOT IN THE DARK

Canon's New ME20F-SH Boasts ISO Sensitivity Up to 4 Million

Canon's latest addition to its professional camera lineup, known as ME20F-SH, is a multi-purpose camera that's equipped with an enhanced version of the 35mm full-frame CMOS sensor, which delivers ultra-high-sensitivity performance to capture Full HD video in extreme low-light conditions without the need for infrared illumination.

Originally developed back in 2013, the 2.26MP CMOS sensor has pixels measuring 19 µm square, which is more than 5.5 times the surface area of the pixels on CMOS sensors of most high-end DSLR systems. This large pixel size enables the ME20F-SH to capture sharp and vivid footage with a minimum subject illumination of 0.0005 lux, equivalent to an ISO sensitivity of 4,000,000 at maximum 75 dB gain setting.

In terms of aesthetics, the ME20F-SH's cubic chassis looks quite sturdy and features a modular design that allows for custom configuration on camera mounting points for discrete placement. Due to its compact form factor and low-light sensitivity, the camera is perfect for night surveillance, nature, wildlife, documentary, and other such usage applications.

What's most versatile about the ME20F-SH is its compatibility with Canon's EF and Cine lenses. This effectively allows users to choose the ideal lens based on the scenario that they are trying to capture. The camera does not record video internally and only outputs signal via its 3G-SDI and HDMI terminals. Also, it is compatible with the optional Canon RC-V100 remote controller for video capturing from hard-to-reach locations.

As for capturing video with great dynamic range, the camera is equipped with Canon Log and Wide DR modes. The ME20F-SH is scheduled to arrive sometime in December 2015 with a recommended retail price of US$30,000 (approx. RM120,825).

INFRARED'S BACK

FUJIFILM Introduces X-T1 IR, its First Infrared X-Series Camera

Back then, most photographers relied on optional filters to do infrared photography and now, they don't have to do that anymore as FUJIFILM recently launched an APS-C X-Series camera that captures light from ultraviolet (UV), infrared portions of the light spectrum measuring, from approximately 380 to 1,000 nm. That camera is the new FUJIFILM X-T1 IR.

The camera is derived from the original X-T1 and shares many of its specifications, including a 16.3MP X-Trans CMOS II image sensor and EXR Processor II. In terms of aesthetics, the X-T1 IR retains the same weatherproof magnesium alloy body, a 2.36 million-dot EVF that greatly assists when shooting in low-light conditions, and the tilting 3-inch LCD display. As for video capability, this camera can record Full HD video at up to 60 fps with 36Mbps bitrate to preserve fine details.

We already know the camera itself is well-known for accurate color reproduction. Adding the infrared and ultraviolet range make the X-T1 IR an interesting and creatively versatile camera. It's also ideal for crime scene investigation, landscape, fine art, medical research and astrophotography.

The FUJIFILM X-T1 IR will be released in October this year with a recommended retail price of US$1,699 (approx. RM6,985).

ANOTHER MONTH, ANOTHER TRIO

Nikon Unveiled Three New Lenses: 24-70mm f/2.8, 200-500mm f/5.6, and 24mm f/1.8

Say hello to Nikon's new AF-S NIKKOR 24-70mm f/2.8E ED VR, AF-S NIKKOR 200-500mm f/5.6E ED VR, and AF-S NIKKOR 24mm f/1.8G ED, as the Japanese camera giant announced these trios that are designed for both enthusiast and professional photographers. The three lenses are compatible with Nikon's full-frame (FX) cameras, as well as APS-C (DX) bodies.

First up, the 24-70mm f/2.8E ED VR features a revised optical design, and Nano Crystal Coat for sharp, clear images with reduced ghost and chromatic aberration. It also has a vibration reduction (VR) mechanism to compensate for camera shake. It will be priced at US$2,400 (approx. RM9,666) for a late August release.

Second in line is the 200-500mm f/5.6E ED VR super telephoto zoom lens. Judging by the focal length and SPORT VR mode, this lens will appeal most to wildlife and sports photographers. In addition, the lens has 4.5 stops of vibration edition to reduce image blur at super telephoto distances. It is expected to go on sale for US$1,400 (approx. RM5,638).

Last but not least, the new 24mm f/1.8G ED is an affordable consideration for photographers who seek a fast wide-angle prime lens. It shares the same DNA as the other AF-S NIKKOR lenses, except for the omission of VR image stabilizer due to its price tag. It will be available starting September with a price tag of US$750 (approx. RM3,020).

HEART-TO-HEART SESSION

GoPro HERO4 Session

GoPro, as a company, has come a long way since its days of introducing a small camera that was made specifically for its creator's love of surfing. Since its conception, the GoPro name and action camera line have become synonymous with the likes of daredevils, stuntmen, and adrenaline junkies all over the world who record their death-defying feats and jaw-dropping stunts. Recently, the company added the HERO4 Session to the lineup, and in this review, we get to talk about the new compact action camera.

As you can see from the product shot that accompanies this review, one of the first things that you will notice is that the HERO4 Session is not built in the same design or chassis as its predecessors, the HERO4 Black and HERO4 Silver. The main difference is that the Session is entirely cubic, and has none of the awkward bulk, or a camera lens, that juts out of the camera's chassis, making it close to 50 percent smaller and 40 percent lighter than GoPro's other flagships.

As you would expect of a GoPro action camera, the HERO4 Session comes with a variety of mounting accessories that are specifically designed for it, such as the ubiquitous GoPro remote, and a direct connection and feed to your smartphone (provided, of course, that you have downloaded the necessary GoPro app from either Google Play or Apple App Store).

Perhaps the most impressive feature of the new HERO4 Session (to us anyway) is its body and housing. Unlike the other HERO4 flagships like the Silver and Black editions, the Session was pneumatically built in a special chamber at GoPro's factory, and that makes the device entirely waterproof and extremely durable without the need of a separate housing. In fact, the only way that you would be able to open up this action camera is by taking a Dremmel cutter directly to its chassis.

On that note, GoPro action cameras are known for their legendary durability. To that end, we decided to test out the camera's video recording capabilities by stepping outside our comfort zone and went out on various intensive activities. We took the camera to a CrossFit workout, and even attached it to the side of a paint gun during a weekend paintball outing.

Needless to say, the HERO4 Session provided us with some really clear and detailed recording on both sessions (no pun intended), but there were noticeable differences. We recorded the CrossFit workout in 1440p/30, and the overall point-of-view videos with the Session felt like something out of the movies. Watching our paintball competition at 1080p/60, however, made us feel like we were watching a live documentary, and our writer was under heavy fire from the opposing forces.

by *John Law*

TAP FOR VIDEO

AT A GLANCE

Memory
microSD (up to 64GB)

Video Resolution
1,440p (up to 30 fps), 1,080p Wide (up to 60 fps), 720p (up to 100 fps)

Wi-Fi
Yes

Weight
74g

Price
RM1,719

The HERO4 Session, next to the HERO4 Silver.

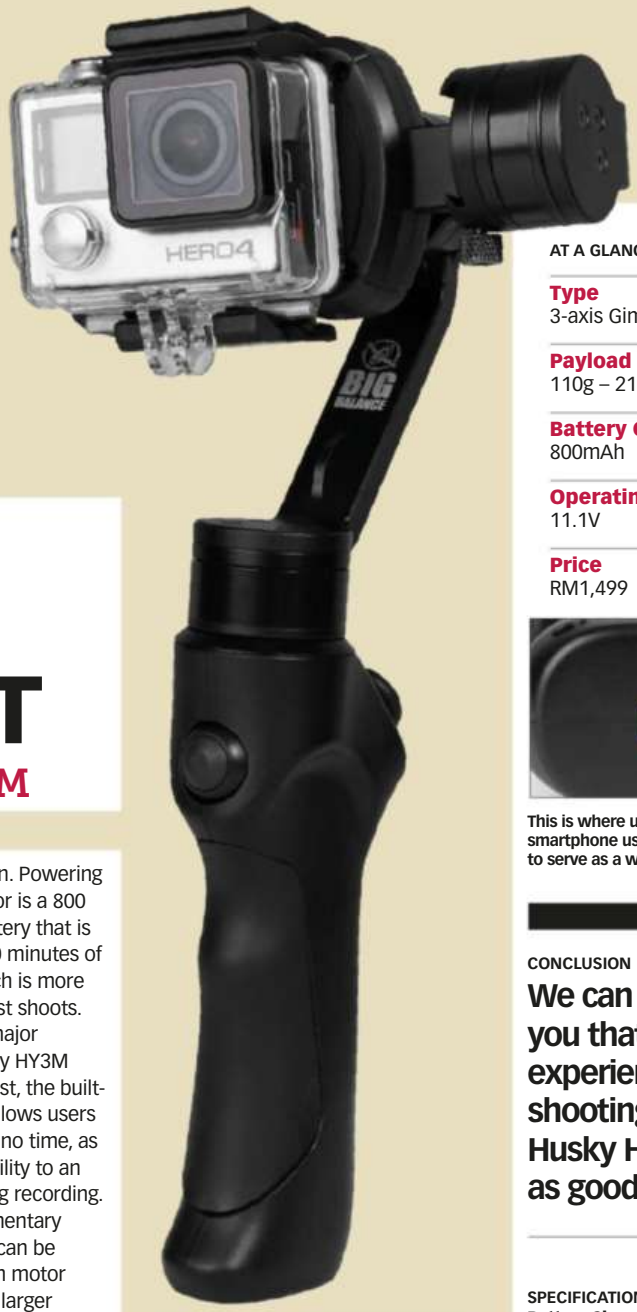
CONCLUSION

The GoPro HERO4 Session is lighter, smaller, and built to withstand even the most harshest of knocks and weather conditions.

SPECIFICATIONS
Display LCD bar only // **Microphone** Dual mic (built-in) // **Photo Resolution** 8MP // **Video Format** H.264 codec, .mp4 file format // **Lens** Ultra-wide angle, f/2.8 // **Warranty** 1-year // **Contact** FunSportz Sdn Bhd // **Telephone** (03) 7733 8939 // **URL** www.funsportz.com.my

TESTED & RATED
9.0/10
HWM MALAYSIA

Available at
PLAZA LOW YAT



HUSKY BALANCE, YOU SHOOT

Big Balance Husky HY3M

Most action cameras these days offer decent capabilities that rival mainstream cameras when it comes to image quality. Most of the time, people use such a device to record everything from traveling to outdoor activities, but they are also known to struggle when shooting handheld video with it. Thanks to Big Balance's Husky HY3M, videographers can now achieve fluid and stable footage with the 3-axis gimbal system. We managed to get our hands on one for review.

At 470g, this gimbal is able to support action cameras weighing between 110g to 210g. Unlike other handheld gimbal stabilizers in the market, the Husky HY3M's build quality is rather solid and promising. It uses three brushless motors – one for each axis – to counteract sudden movements, both wide and subtle, to create remarkably steady, professional-looking videos.

Just like the Gibbon GN1 that we reviewed in the previous issue, the Husky HY3M boasts the same IMU sensor that detects any shake and movement along the three axes: tilt, roll and pan. Powering the motor and sensor is a 800 mAh removable battery that is capable of up to 100 minutes of operating time, which is more than enough for most shoots.

There are three major features of the Husky HY3M handheld gimbal. First, the built-in easy clip holder allows users to begin shooting in no time, as well as delivers stability to an action camera during recording. Next is the complementary counterweight that can be attached to the pitch motor when shooting with larger smartphones. The last feature to highlight is the joystick, which can be used to control the tilt and switch between the shooting modes of the gimbal.

Unlike the previous Gibbon GN1, handling the Husky HY3M is much simpler and faster. All we need to do is mount the action camera to the easy clip holder and adjust its vertical axis. Then, keep the gimbal motionless before powering it on. Once powered, the gimbal will automatically stabilize the action camera and is good to go.

Performance-wise, we brought out the gimbal for our on-field testing with the GoPro HERO4 attached, and it turned out great. The footages we shot looked smooth, stable and professional – almost like in the movies. Due to its compact size, the gimbal can be used in almost any environment, and is relatively easy to carry around. In terms of functionality, there are three shooting modes: Pan Follow, Pan-Tilt Follow and Lock, but we predominantly used the Pan Follow mode because most of our intended subjects are fast-motion subjects.

by *Ammar Uzair Aminuddin*

AT A GLANCE

Type
3-axis Gimbal System

Payload
110g – 210g

Battery Capacity
800mAh

Operating Voltage
11.1V

Price
RM1,499

This is where users can mount a smartphone using the easy clip holder to serve as a wireless viewfinder.

CONCLUSION

We can assure you that the experience of shooting with the Husky HY3M feels as good as it looks.

SPECIFICATIONS
Battery Charging Time 45 minutes // **Battery Operating Time** 100 minutes // **Dimensions** 139 x 115 x 277 mm// **Weight** 470g (w/o counter weight)// **Warranty** 1-year// **Contact** YL Camera Services Sdn Bhd / MTCS Group Sdn Bhd // **Tel** (03) 2110 2261 / (03) 2145 5979 // **URL** www.bigbalance.com

TESTED & RATED

9.0/10

HWM MALAYSIA

VOLUME 8 ISSUE 6

SMB

THE SMALL MEDIUM BUSINESS SECTION

BIG DATA NATION

More Than Just a Buzzword, Big Data Could Play a Major Role in the Development of a Country, Not Only As a Conduit for Financial Growth, But Also a Way to Enrich its Citizens

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AZIZUL RAHMAN ISMAIL

He knows what you need

Getting ahead in business is all about getting the information you need, when you need it, and Azizul knows this well. He digests business related technology, events, news, and products to give you only what you need to drive your small and medium-sized business ahead of the pack.

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146 Lenovo ThinkPad X1 Carbon (2015)

GLOBAL SECURITY PARTNERSHIP

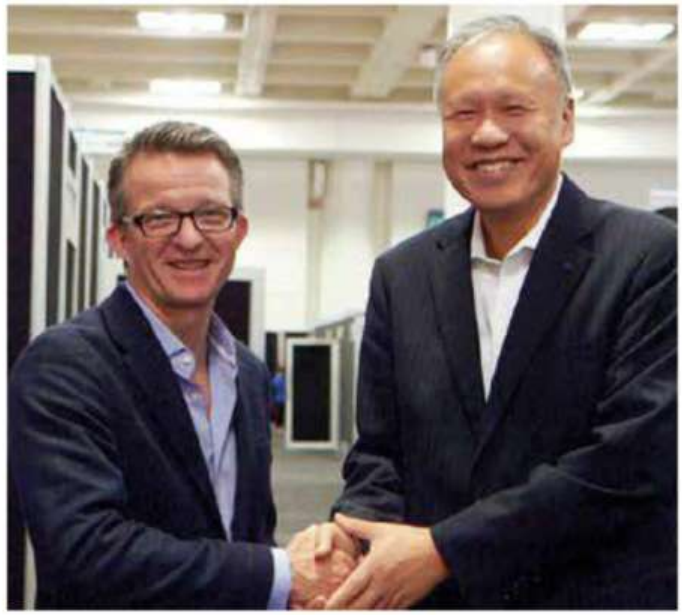
NTT Com Security and Fortinet Entered Partnership to Enhance Cloud Security, Network Risk Management, SIEM, SDN and Virtualization Globally

As part of a new global security partnership, Fortinet and NTT Com Security will collaborate and share their expertise in information security, risk management, and cyber security solutions.

The partnership includes incorporating Fortinet's security solutions into NTT Com Security solutions to help protect customers across the globe, irrespective of size or sector.

"Our mission is to secure and simplify IT infrastructures as businesses increasingly look to adopt cloud-based systems and virtualization. Through our partnership with NTT Com Security, we continue to expand our global value-added security services and solutions for organizations to protect their next-generation networks and datacenters," said Ken Xie, CEO of Fortinet.

"As global experts in our respective fields, NTT Com Security and Fortinet both share a common goal to provide organizations struggling to manage a growing number of complex and advanced threats with expert advice and world-class security solutions. NTT Com Security's proven security expertise and global reach, together with Fortinet's best-of-breed solutions, is a powerful combination." added Simon Church, CEO of NTT Com Security.



(From left to right) NTT Com Security CEO Simon Church and Fortinet CEO Ken Xie.

Together, Fortinet and NTT Com Security offer cloud security, firewall and network risk management, SIEM systems integration, SDN (software defined networking), and virtualization. In return, both companies would also benefit from each other's experience and are able to provide technical consultants to expand their support services in terms of incident management, operational risk reduction, support in complex architectural designs and implementations.

LENOVO BUSINESS STORAGE

Two New SAN Solutions for Small and Mid-Sized Businesses Launched for the Malaysian Market

Lenovo announced the introduction of the Storage S2200 and S3200 storage arrays into the Malaysian market. The storage area network (SAN) arrays debuted at the Lenovo Tech World event in Beijing, China back in May.

With the S2200 and S3200, Lenovo has set a low bar of entry, focusing on delivering enterprise-class SAN offerings at an entry-level price point.

"Today, we are introducing a new Standard for SAN to the Malaysian market. The new Lenovo S2200 and S3200 storage offerings highlight our extreme focus on affordable innovation. This further extends Lenovo's ability to be your one-stop-shop from PCs to DCs," said Khoo Hung Chuan, Country General Manager, Lenovo Malaysia.

The Lenovo Storage S2200 and S3200 provide data management for a variety of applications that require high IOPs. These storage arrays offer dual and single controllers in 2U-12 and 24 drive configurations.

The S2200 supports up to 96 drives, while the S3200 supports up to 192 drives. Both support Fiber Channel, iSCSI and SAS, with the S3200 supporting multi-protocol connectivity that can work with Fiber Channel and iSCSI simultaneously.

Both SAN arrays come with Lenovo SAN Manager, Lenovo's own GUI that features Data Tiering, Thin Provisioning, SSD Read Caching, Rapid RAID Rebuild, Snapshot, and Storage Pooling.

The Lenovo S2200 and S3200 SAN are available now from RM22,209 to RM26,910, and from RM42,875 to RM44,785, respectively. These prices, however, are only valid until August 31, 2015.

Lenovo Storage S2200.

Lenovo Storage S3200.

RENEWED FOCUS

Red Hat Malaysia Sdn Bhd Officially Opened in Kuala Lumpur

Red Hat, well-known for providing open source solutions such as high-performing cloud, Linux, middleware, storage and visualization technologies for small and large enterprises, is focusing on the Malaysian market with the incorporation and opening of Red Hat Malaysia Sdn Bhd in Kuala Lumpur.

"Malaysia is an important market for Red Hat as we see much potential for the adoption of open source technology across industries. Our customers and partners are integral to our success, and having a local presence gives us the opportunity to work closer, and forge stronger relationships in Malaysia," said Damien Wong, Senior Director & General Manager, ASEAN, Red Hat.

With the move, Red Hat aims to develop closer ties with their key partners including independent software vendors (ISVs), such as Infopro and Uberfusion; and channel partners such as Wikilabs and Abyres; as well as key customers that include Malaysia's infrastructure conglomerate, YTL, and the Melaka State Government.

"YTL has had a proven and highly successful long-term collaboration with Red Hat, with the suite of enterprise solutions providing an efficient and cost effective platform for running applications in the cloud. Red Hat's local subsidiary here in Malaysia shows its continued commitment to the development of open source in the region, and gives customers like us more confidence in the promise of open source," said Wing K. Lee, CEO of YTL Communications.

(From left to right) David Yap, Country Manager, Malaysia, Red Hat and Damien Wong, Senior Director & General Manager, ASEAN, Red Hat.

RE-THINK ENTERPRISE FLASH

Dell Storage Arrays Offer Lower Flash Cost and Increased Density Across All Arrays

Dell announced its first-to-market offering of the latest highest-density and lowest-cost-for-performance enterprise flash drives in the form of the new Mainstream Read-Intensive (RI) SSDs, which are based on Triple Level Cell (TLC) 3D NAND technology.

"Dell's unique intelligent data placement strategy allows different types of flash storage—SLC, MLC and TLC—to be efficiently deployed in multiple tier architectures that can be more cost-effective than single tier flash-based arrays. Dell's announcement of flash drives built on TLC 3D NAND technology puts them in the storage density lead at 45TB per rack unit for flash-based arrays and drops the dollar per gigabyte cost of enterprise flash storage to roughly the same cost as 15K RPM HDDs—with significantly higher performance. Cost has been the single biggest stumbling block to flash adoption in the data center, and Dell's announcement of a new lower dollar per gigabyte price point for all-flash configurations enables the use of flash technology across an even greater variety of enterprise workloads," said Eric Burgener, Research Director, Storage Systems, IDC.

Dell Storage SC Series all-flash and hybrid flash solutions saw an increase in revenue of 89 percent year over year in the first quarter of 2015. According to a survey from that same year, Dell is also the top vendor of choice for deploying enterprise flash/SSDs.

Dell's flash-optimized Data Progression software allows the leveraging of leading-edge flash technologies to create more affordable, high-performance solutions. As a result, the adoption of Dell Storage SC8000, SC4020 and SCv2000 Series with hybrid flash or all-flash array configurations has become more affordable.

Alan Atkinson, VP and GM, Dell Storage with the SC8000 Array.

BIG DATA NATION

Harnessing Big Data is the Key to Developing a Nation and Improving Quality of Life

(From left to right) Ivan Teh, Managing Director of Fusionex Corporation Sdn Bhd; Craig Morrison, Country Manager of Teradata Malaysia; Stephen Brobst, Chief Technology Officer of Teradata Corporation; and Dr. Karl Ng, Director of Innovation Capital Division at the Multimedia Development Corporation (MDeC).

A roundtable discussion was held recently to discuss 'National Development with Big Data Analytics'. It revolves around the importance of government agencies to effectively harness the benefits of open data.

"The benefits of big data analytics are significant and should be clear and compelling to public sector agency decision-makers as well as users. Since the announcement of the National Big Data Analytics Initiatives in 2013, we have also seen how analytics technologies that have delivered exceptional results for the private sector can be put in place to deliver benefits for the government here," said Craig Morrison, Country Manager for Teradata in Malaysia.

Stephen Brobst, Teradata's Chief Technology Officer said that to make Big Data successful, one must create big value from little data and put more effort into innovative and creative ways to use data, instead of investing in more and more technology.

Teradata is currently working closely with the Multimedia Development Corporation (MDeC) to develop projects that benefit society through Big Data Analytics, and in turn, the government and businesses within Malaysia. It is a part of MDeC's National Big Data Analytics Innovation Network, which is working to accelerate big data analytics adoption in Malaysia.

The roundtable, which includes Ivan Teh, Managing Director of Fusionex and Dr. Karl Ng, Director of Innovation Capital Division Director at MDeC, cited a Gartner study that said that open data is one of the ten most important technology trends for governments in 2015.

However, merely making data available is not enough. Data must be made tangible for the government; and availability must quantifiably contribute to operational efficiency or effectiveness, while supporting economic development and national productivity.

DIGITAL TRANSFORMATION

As Malaysia Embraces the Digital Age, There Arise a Need for a Better Way to Monitor the Performance of a Given Application

A poll conducted by Gartner in 2014 found that 22 percent of business executives and IT professionals said that they are already doing some form of digital business. This is mirrored by the increasing adoption of digital and self-service channels by various industries in Malaysia, including financial services, media, retail, hospitality, healthcare and government.

PIKOM further affirmed this trend by estimating that the ICT industry will grow 14.2 percent this year, an increase from 9.4 percent in 2013 and 11.4 percent in 2014. Currently, the ICT service sector contributes 6.4 percent of the country's gross domestic product (GDP).

However, digital transformation industries and businesses began to realize that there is a need for a new way to monitor their operations. Understanding this, Dynatrace is working closely in partnership with government agencies, such as LHDN and EPF, as well as MIMOS and MAMPU, to help them further the digital transformation plans for the nation.

Dynatrace, an application performance management (APM) company, recently released Dynatrace 6.2, an APM solution that is scalable from start-ups to mid-sized and large enterprises.

APM is a tool that lets organizations know how things are working within their applications. It provides clear, unified and actionable intelligence, regarding customers and the performance of the apps they are interacting with, in real time.

NEC STRENGTHENS IOT

Five New Solutions from NEC Spearhead the Company into its Next Frontier, the Internet of Things (IoT)

NEC Corporation announced that it is making moves to strengthen its position and business in the Internet of Things. This begins with the development of five new solutions related to IoT, and the increase of core personnel engaging in IoT-related systems.

"In the coming IoT era, the extra value of data found in the digital world will be incorporated swiftly into real society, industry and life. This will create opportunities for new social value, encourage reforms of the industrial structure and promote changes in the knowledge creation process. NEC will capitalize on its extensive track record and its leading technologies in the software-defined networking (SDN), big data, cloud and security areas in order to construct flexible and robust IoT systems," said NEC's Executive Vice President and Chief Marketing Officer (CMO), Takaaki Shimizu.

The solutions developed by NEC include Landslide Prediction Solution, Water Demand Prediction Solution, Electric Power Demand Forecasting Solution, Image- and Weight-Based Goods Inspection Solution, and VIP Detection Solution.

They cater to a wide range of organizations from governments and utility operators, to distributors and retailers. Meanwhile, NEC is also committed to increase its core personnel in IoT-related systems construction from around 100 to nearly 500 by 2020.

"Information and communications technologies-related data is rapidly growing on a global scale, and as a result, huge amounts of data (big data) are expected to be generated in the near future. IoT technologies open the way for collecting big data from many different goods that were traditionally not subject to control. As sophisticated analyzes of these digital data are conducted, extra value will be discovered," added Shimizu.

VEEAM-ORACLE INTEGRATION

Latest Release of Veeam Availability Suite Includes Veeam Explorer for Oracle, a Powerful Tool to Interface with One of the Best Enterprise Database Systems in the Market

Ratmir Timashev, CEO of Veeam.

Veeam Software announced the addition of the Veeam Explorer for Oracle into the new and highly-anticipated Veeam Availability Suite v9, which will be available later this year. It brings the integration of one of the most popular enterprise database systems in the industry.

Veeam Explorer for Oracle provides transaction-level database recovery, and agentless image-based backup and recovery for Oracle Automatic Storage Management (ASM). It also bring quick and simple one-click restore of individual databases; support for databases running on Windows- and Linux-based servers, and full compatibility with Oracle ASM.

"When it comes to databases, no company is more ubiquitous than Oracle and its position as the No.1 database provider to enterprises across the globe serves to underline the critical nature of the operations it supports," said Ratmir Timashev, CEO of Veeam.

Veeam Explorer for Oracle will be a part of Veeam Backup Free Edition and available to all Oracle administrators for free. However, advanced functionality will only be available in Enterprise and Enterprise Plus editions.

Also announced is the new eDiscovery features for Veeam Explorer for Microsoft Exchange, which provide detailed export reports that allow customers to specify exactly what was exported, from where, and with what search criteria; adds query result estimation capabilities; and comply with legal or government investigations.

Additional new enhancements for Microsoft enterprise applications now allow the restoration of Group Policy Objects, integrated DNS records and configuration partition objects with Veeam Explorer for Microsoft Active Directory; full-site and site collection restores with Veeam Explorer for Microsoft SharePoint; and table-level restores with Veeam Explorer for Microsoft SQL Server.

HIGH-YIELD INKJET

Epson L220

Epson's range of Ink Tank System printers is gradually gaining momentum with new models that cater to a wide range of users looking for low-cost, high-yield printers. What sets them apart are their external large capacity ink reservoirs and ink refills, which are as low as RM20 each.

One of the latest models is also the most affordable multi-function Ink Tank System printer in the series: the Epson L220. It does away with the kind of new-fangled features that are becoming commonplace in today's printers to keep the cost down, so we are here to test what is left and see if it is worth the friendlier price tag.

As a marginal update to its predecessor, the L220 has the same looks, features, performance, and footprint as the L210. It is, however, a little wider because of its newer Ink Tank System reservoir.

It has no wireless connectivity, no network connectivity, no mobile app support, and no display with complicated controls. As we said earlier, the Epson L220 is very basic. Nevertheless, it is still very functional.

There are only four buttons on the printer, all of which can be found at the front. From left to right are the power button, B&W copy button, color copy button, and the multi-function operation button. We feel that the copier buttons are not intuitively labeled and the operation button, although useful, requires some know-how to be used correctly.

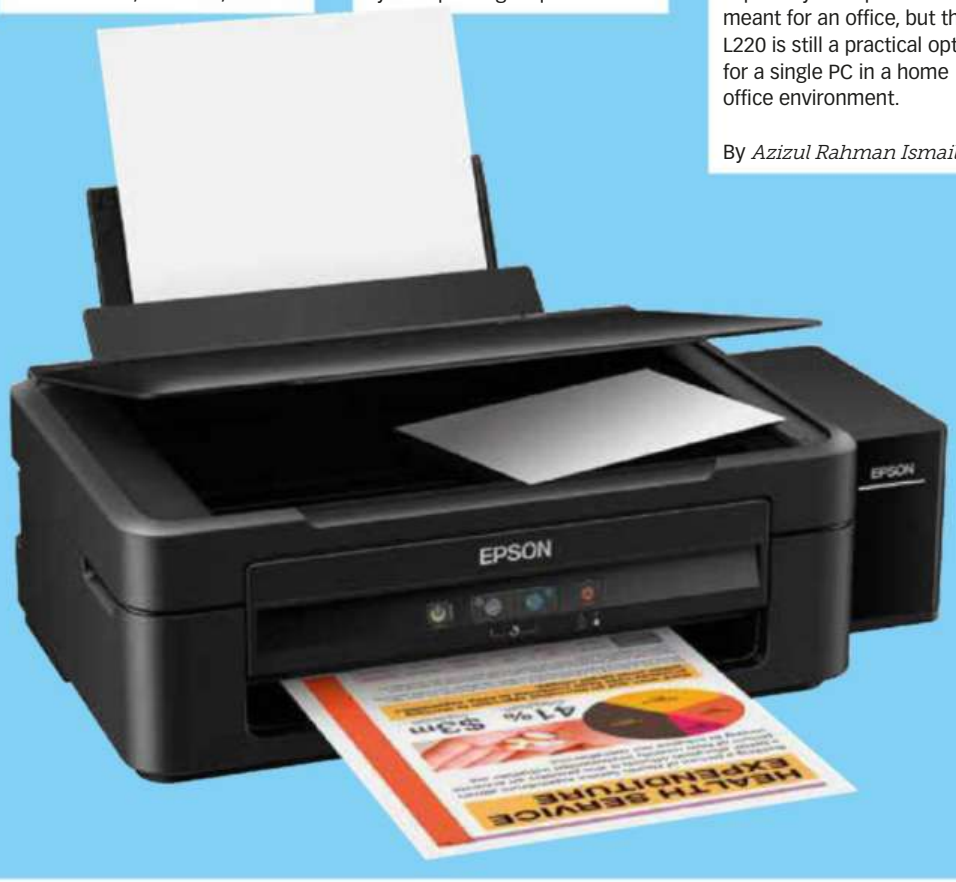
As with any Ink Tank System printer, the Epson L220's initial setup can get a little messy with bottles of inks, and slow with a 20-minute initial ink system priming sequence. After that, it works great.

Copying using the L220 is average at approximately 10 seconds for a black-and-white copy, and 20 seconds for a color duplicate. The quality is presentable and good enough for documents and graphics, but not for photographs. This is true for scans as well.

Printing speeds are slower paced at about 10 ppm for monochrome prints and 7 ppm for color mixed media prints with no automated duplex printing. Print quality seems to suffer a little, with text exhibiting slight bleed in prints with multi-page documents after the initial pages.

The L220 does not have a paper tray or an auto document feeder, but it does have a paper holder that hold up to 50 sheets of A4 paper and approximately 10 sheets of photo paper. This is small, especially for a printer that is meant for an office, but the L220 is still a practical option for a single PC in a home office environment.

By *Azizul Rahman Ismail*



AT A GLANCE

Printer Type
Multi-function inkjet

Nozzle Configuration
180 nozzles (Black), 59 nozzles per color (Cyan, Magenta, Yellow)

Print Direction
Bi-directional printing, Uni-directional printing

Maximum Resolution
5,760 x 1,440 dpi (with Variable-Sized Droplet technology)

Price
RM498

The consumables that go with the Epson L220 are affordable and high-yield.

CONCLUSION

The Epson L220 is an entry-level printer with performance that befits a home or a home office.

SPECIFICATIONS

Scanner Type Flatbed color image scanner // **Sensor Type** CIS // **Optical Resolution** 600 x 1,200 dpi // **Paper Feed Method** Friction feed // **Dimensions** 482 x 300 x 145 mm // **Weight** 4.3kg // **Warranty** 2-years // **Contact** Epson Malaysia Sdn Bhd // **Telephone** (03) 5628 8288 // **URL** www.epson.com.my

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7.5/10

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PORTABLE WONDER

Fujitsu ScanSnap iX100

AT A GLANCE

Scanner Type
Single Sheet, Simplex, Color Scanning with CDF (Continuous Document Feeding)

Image Sensor
1x CIS (Contact Image Sensor)

Light Source
3 Color LED (Red / Green / Blue)

Optical Resolution
600 dpi

Price
RM980

The carrying case for the iX100 is utilitarian, functional, but does not have the space for cables.

CONCLUSION

The Fujitsu ScanSnap iX100 is simple, portable, and has exceptional performance making it the best portable scanner we have seen.

SPECIFICATIONS
Paper Weight 52 to 209 g/m² // **Paper Setting Front-side** up // **Software Interface (Driver)** ScanSnap Manager // **Interface** Wi-Fi, USB 2.0 // **Dimensions** 273 x 47.5 x 36 mm // **Weight** 400g // **Warranty** 1-year // **Contact** Digital Paper Sdn Bhd // **Telephone** (03) 5569 2002 // **URL** my.fujitsu.com

Last month, we reviewed the built-for-desktop Fujitsu ScanSnap iX500, and we quite liked the product despite its high price point. This month, we were given the opportunity to check out the wireless, battery-operated, and mobile-friendly ScanSnap iX100.

The iX100 is a document scanner that is designed for the on-the-go professional. Smaller than a rolled up newspaper, it weighs only 400g, which makes it compact and very portable. It also has a built-in loop for lanyards, and the model we reviewed came with a carrying case.

Powering on the device is as simple as flipping the scanner feed open, while closing it will power it down. We really like this feature as it is very practical and ensures that the iX100 is switched off when not in use.

The simple and smart design is also applied to the rest of the scanner. There are only two buttons (one for scan, and the other for WPS), a switch for Wi-Fi, no displays, and only one Micro-USB port for power and wired connectivity. There are also two LEDs to indicate battery power and wireless connectivity status.

The iX100 could connect wirelessly to a mobile device via Wi-Fi or Wi-Fi Direct. To test the device, we paired it to an Android device via the ScanSnap app. Pairing a device is easy and once paired, re-establishing connection is effortless.

However, the scanner would only connect to a router via WPS, which is not always convenient when you're on the move. And if you connect to it via Wi-Fi Direct, you will need to disconnect from it to reconnect to the Internet.

ScanSnap lets you scan documents into PDF and JPEG format. It also offers a range of customizability options, such as color mode, image quality, simplex or duplex scanning, paper size and compression rate. We found that leaving most of these settings at default works just fine.

Scanning a sheet of A4 paper takes roughly five seconds, and the result looks professional, legible, and clean. We then tested the scanner further by scanning 160 pieces of 80 x 120 mm full-color art cards. The whole process took roughly five minutes, with each card taking under two seconds to scan.

The iX100 felt a little warm during the test, but it held up very well. The result was beautiful, which makes us consider using it to scan artwork at conventions, and photographs (printed or instants). Although versatile, we found that the ScanSnap app cannot handle scans longer than an A4 paper.

by *Azizul Rahman Ismail*

TESTED & RATED

8.5/10

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BUSINESS CLASS

Lenovo ThinkPad X1 Carbon (2015)

AT A GLANCE

Processor
2.60GHz Intel Core i7-5600U

Operating System
Windows 8.1 Pro 64-bit

Memory
8GB DDR3

Storage
256GB SSD

Price
RM8,199 (incl. 6% GST)

Ultrabooks don't get any thinner and lighter than the ThinkPad X1 Carbon (2015).

CONCLUSION

The ThinkPad X1 Carbon (2015) is inarguably a very formidable Ultrabook, but it's also unfortunately one that's priced a tad too exorbitantly for the average Joe.

SPECIFICATIONS

Display 14-inch WQHD (2,560 x 1,440) IPS anti-glare touchscreen // **Graphics** Intel HD Graphics 5500 // **I/O Ports** 1x power port, 2x USB 3.0, 1x HDMI-out, 1x Mini-DisplayPort, 1x audio combo jack, 1x ThinkPad Ethernet Extension Cable port // **Battery** 4-cell battery // **Connectivity** Wi-Fi 802.11a/b/g/n, Bluetooth 4.0 // **Dimensions** 331 x 227 x 17.7 mm // **Weight** 1.42kg // **Warranty** 3-year // **Contact** Lenovo Technology Sdn Bhd // **Telephone** (03) 7681 8000 // **URL** www.lenovo.com/my

IBM's ThinkPad line of notebooks has for the longest of time been revered as the benchmark for business laptops, and for good reason – they're built to be as tough nails both inside and out. Now that the ThinkPad brand is officially under Lenovo's purview, will the refreshed ThinkPad X1 Carbon Ultrabook be able to live up to long-standing standards? Let's find out.

Just like the ThinkPad notebooks of yore, the X1 Carbon's design is very conservative. You won't find any flashy colors on the X1 Carbon – only a mundane black-on-black paint scheme. The X1 Carbon is exceedingly thin and lightweight – measuring only 1.7cm thin at its thickest point, and tipping the scales at only 1.42kg. These modest numbers allow the X1 Carbon to be extremely portable, to a point where we could single-handedly carry it around using only the tips of our fingers.

Lying within the razor-thin chassis of the X1 Carbon is an ultra-low voltage, 5th generation 2.60GHz Intel Core i7-5600U processor, 8GB of DDR3 RAM, an integrated Intel HD Graphics 5500 GPU, and a 256GB SSD. Suffice to say, video gaming isn't going to be the X1 Carbon's forte.

But then again, we should probably remind you that the X1 Carbon isn't made with the hot-blooded gaming enthusiast in mind. No, it's made for the business professional who needs a foolproof Ultrabook that can withstand the hustle and bustle of the corporate world – and that means getting the core components of a notebook done right.

And that brings us to the 14-inch, WQHD (2,560 x 1,440) IPS anti-glare touchscreen display of the X1 Carbon, which not only offers bright and vibrant colors, but also a tack-sharp pixel density of 209.8 ppi.

The backlit keyboard of the X1 Carbon is pretty enjoyable to use: its keys are solid, and they seem to have more travel than the YOGA 500 notebook that we reviewed just last month, which is very satisfying. We didn't encounter any performance issues with the X1 Carbon in spite of its modest hardware – we were able to write this review on Google Docs without a hitch, despite literally having another dozen Google Chrome tabs opened in the background alongside a Full HD video.

As far as synthetics benchmarks are concerned, the X1 Carbon scored 4,704 for 3DMark's Cloud Gate benchmark, 2,582 for the Sky Diver benchmark, 788 for the Fire Strike benchmark, and 354 for the Fire Strike Extreme benchmark.

Over on PCMark 8, the X1 Carbon scored 2,819, 3,794 and 3,619 for the accelerated Home, Work and Creative benchmarking suites, respectively. Finally, we gauged the X1 Carbon's battery life by using the battery life mode of PCMark 8's Work benchmark suite, which subsequently generated a score of three hours and 47 minutes – not very impressive Ultrabook standards, but we have a hunch that the power-hungry, pixel-dense screen of the X1 Carbon is to blame.

By *Peter Chu*

TESTED & RATED

8.0/10

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LEARN

NEW HORIZONS: REACHING PLUTO

Pluto has been our Solar System's last holdout. Even though it was first discovered back in 1930 by Clyde Tombaugh, a glimpse of the former planet turned dwarf planet has eluded us. That is, until NASA's New Horizons craft swung by the icy star back in July and beamed back the first-ever images. Here's how it was done.

Text by *Wanzi Koh*

PICTURE **NASA**

MORE INSIDE>
- FAST CHARGING TECH EXPLAINED
- WHY NOT ALL 4K TVS ARE THE SAME

A CAMERA IN SPACE:

All about how far we'd go to take a picture of a rock.

by *Koh Wanzi*

New Horizons' successful flyby is significant not just because of the information it returned about Pluto, but because it closes a chapter in mankind's exploration of the immediate Solar System. Mariner 2 conducted a flyby of Venus in 1962, and other probes have been sent to farther planets in succeeding decades. Pluto was the only one that remained out of reach, but through the New Horizons spacecraft, we've finally visited all our planetary neighbors.

Here's a look at some of the salient points of the nine-year mission.

A LONG, URGENT VOYAGE

New Horizons blasted off from Cape Canaveral Air Force Station on January 19, 2006, aboard an Atlas V 551 launch vehicle. It achieved a launch velocity of 58,536 km/h, making it the fastest craft to ever leave Earth's orbit. As it turns out, astronomers were in something of a hurry to reach Pluto.

To the untrained eye, the cosmos may appear immutable and unchanging. But Pluto has actually been moving farther away from the Sun since 1989, which means it's getting less heat each year, a big deal for an already cold planet. Astronomers think that this could cause the atmosphere to freeze and descend to the ground, so they had to get there in time to study the thicker atmosphere while it was actually still in the air.

Furthermore, it was important to map as much of Pluto and its moon, Charon, as possible. Just as the Arctic Circle on Earth experiences six-month stretches of day and night, parts of Pluto and Charon remain shrouded in darkness for entire decades. And as Pluto moves farther away, increasing sections of both bodies will recede into shadow, making it difficult for New Horizons to capture pictures of their surfaces.

PICTURE NASA

GRAVITY THIEF

In order to get to Pluto as quickly as possible, the team behind New Horizons planned to swing by Jupiter for something called a gravity assist maneuver. For the first 13 months after launch, New Horizons was busy performing a series of instrument checks and calibrations, small trajectory corrections, and rehearsals for the scheduled encounter with Jupiter.

That happened on February 28, 2007, when the craft swung by the gas giant, dipped into a gravity well and absorbed some of Jupiter's orbital energy to propel itself back out even faster. This added over 14,000km/h to its speed, enabling it to shave three years off its journey. And at a distance of 2.3 million kilometers from Jupiter, it was also the closest a spacecraft has ever come within the planet.

CRUISE AND SNOOZE

From 2007 to 2014, New Horizons spent the majority of the time in a state of hibernation, signaling once a week to the team on Earth that all was well. However, it was roused from its slumber for about 50 days a year to perform a series of instrument checks and navigation measurements to ensure that it remained on the correct course.

While most spacecraft rely on solar energy to power their onboard systems, New Horizons' journey into the outer reaches of the Solar System meant that this won't be very feasible. Instead, it gets its power from 11kg of plutonium dioxide, which can last until the late 2020s or beyond.

Electrical power is generated from a single radioisotope thermoelectric generator (RTG), which converts the heat generated from the natural radioactive decay of the plutonium dioxide fuel into electricity.

THE GOD OF THE UNDERWORLD HAS A HEART

On July 14, 2015, New Horizons performed the first-ever flyby of the icy dwarf, coming within 12,500km of its surface. This was the culmination of a set of intensive preparations, which began when the craft woke from its hibernation in December 2014.

One of the most striking images came about by combining four images from New Horizons' Long Range Reconnaissance Imager (LORRI) with color data from the Ralph visible and infrared spectrometer to create an enhanced global color view.

At the center of the 'heart' is an icy plain that has been dubbed Sputnik Planum. This region shows no impact craters, whereas other regions are peppered with them. The crater-marked regions suggest far greater age than the smooth ones, indicative of a complex geological history.

FAST CHARGING EXPLAINED

by *James Lu*

As smartphone displays have grown in size and resolution, so too has battery capacity to meet the increased power draw. Unfortunately, battery life still struggles to accommodate the needs of heavy-usage smartphone users and, as such, reducing recharge times has become the next best thing. Over the past few years, a number of companies have introduced innovative technologies that speed up the charging process.

HOW CHARGERS WORK

How fast a battery charges is determined by how much power it receives from the power source (normally a wall outlet), through the charger, to your phone. Your phone also includes built-in regulators to prevent pumping too much power into the battery and frying it. The actual amount of power output from the charger is determined by the voltage (measured in volts) and current (measured in amps) that it is rated for safe use.

Not all chargers output the same volts and amps. A standard phone charger will output around 1A at 5V for a total of 5W of power. If you charge your phone by connecting it to a USB port on your laptop, you're looking at 0.5A at 5V for 2.5W of power on a USB 2.0 port, or 0.9A at 5V for 4.5W of power on a USB 3.0 port, which basically means that if your phone can handle anything above 0.9 amps (it almost certainly can), a USB port will charge it more slowly than the charger that came with the device.

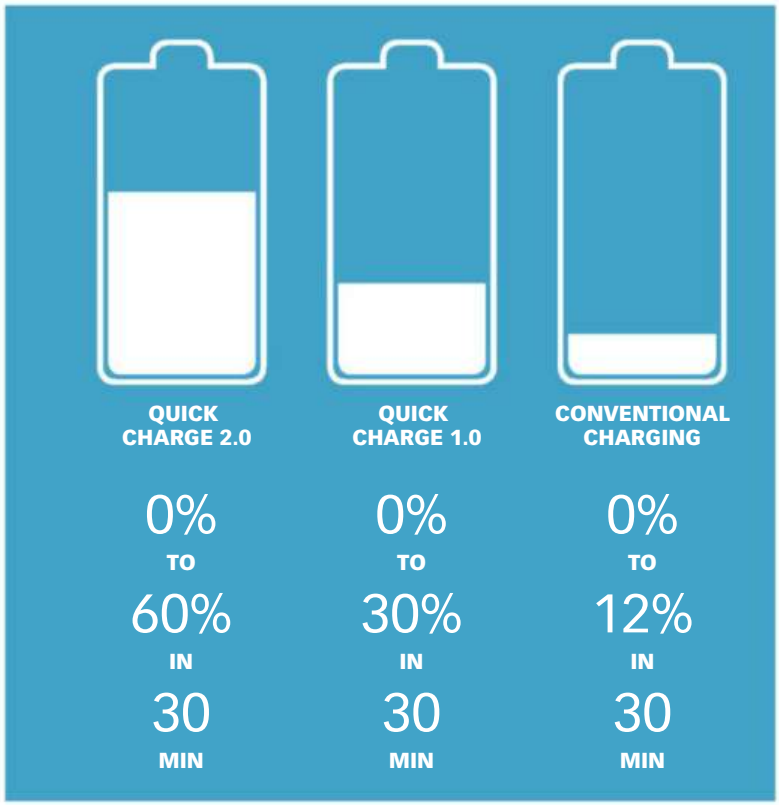
Now let's take a look at some of the fast charging technology available today.

QUALCOMM QUICK CHARGE

The most prevalent fast charging technology available today is Qualcomm's Quick Charge. Qualcomm's technology is designed to maximize charging efficiency by delivering a higher power load. Quick Charge 1.0 made use of a 2A/5V charger, resulting in 10W of charging power, which is double the conventional 1A/5V chargers. Obviously, only phones with higher internal regulators were able to make use of Quick Charge 1.0, and you could find it on the Samsung Galaxy S III, LG Nexus 4 and Optimus G, and Xiaomi Redmi 2, as well as a few others. As far as more recent devices are concerned, the Xiaomi Mi 4i still uses Quick Charge 1.0.

In 2013, Qualcomm introduced Quick Charge 2.0 on Snapdragon 800 chipsets, which allows for an even higher level of power transfer between your power source and device. There are actually three different specifications of Quick Charge 2.0 chargers: 3A/5V, 1.67A/9V, and 1.25A/12V. However, all three deliver 15W of power.

Plenty of the latest devices support Quick Charge 2.0, including the LG G4 and G Flex 2, HTC One M9, Samsung Galaxy Note 4 and Galaxy Note Edge, Sony Xperia Z3 and Z3 Compact, and Xiaomi Mi 4. However, out of all the phones listed, only the Samsung and Xiaomi phones include a Quick Charge 2.0 charger in the box. If you do end up buying a Quick Charge 2.0 charger, do note that all devices compatible with the Quick Charge 2.0 standard can safely use any Quick Charge 2.0 compatible charger - the technology inside them is the same. Don't be fooled into buying an expensive branded one that matches your phone brand, as it won't charge any faster.



PICTURES OPPO, SAMSUNG, ASUS ILLUSTRATIONS IANCHONG

SAMSUNG ADAPTIVE FAST CHARGE

Samsung's Fast Charge technology, found in the Galaxy S6 and S6 edge appears to be exactly the same as Qualcomm's Quick Charge 2.0 technology. The charger that ships with both the Galaxy S6 and S6 edge is rated to the exact same 1.67A/9V specifications as Qualcomm's Quick Charge 2.0 chargers. We also tested the S6 with the charger supplied with the Galaxy Note Edge, and it appears to work just fine. It's possible that Samsung simply modified Qualcomm's technology and adapted it to work with its own Exynos chips.

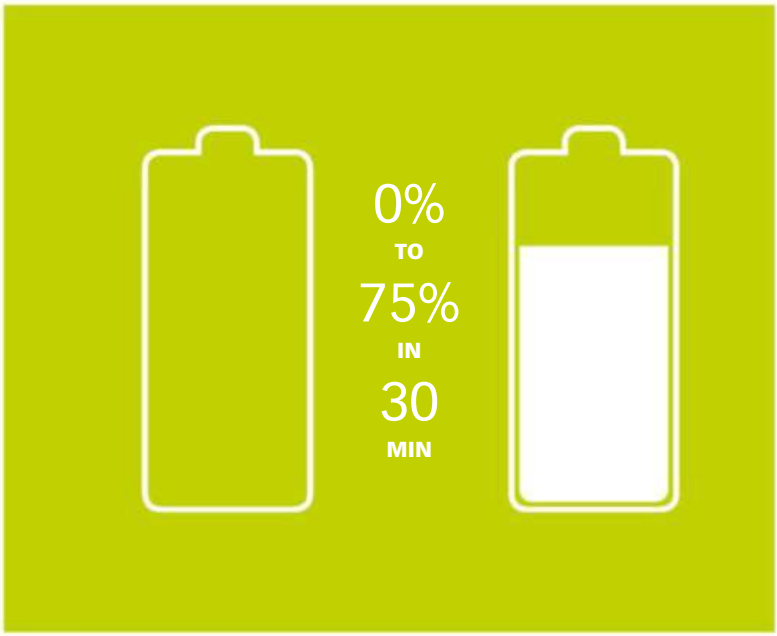
ASUS BOOSTMASTER TECHNOLOGY

ASUS' BoostMaster technology, found in its ZenFone 2 series of phones, also appears to use a similar technology to Qualcomm's Quick Charge 2.0. The charger supplied with the phone is rated at 2A/9V, supplying a maximum of 18W of power. Despite using an Intel Atom processor, the ZenFone 2 will also fast charge using a Qualcomm Quick Charge 2.0 charger or even a Samsung Adaptive Fast Charger.

OPPO VOOC FLASH CHARGE

While Oppo uses Qualcomm's chips in its phones, it has its own quick charging innovation that's quite unique. It's called VOOC Flash Charging, which stands for Voltage Open Loop Multi-Step Constant-Current Charging.

While VOOC chargers also deliver a higher power load than standard chargers - the current second generation VOOC mini chargers deliver 5A/5V for a whopping 25W of power - Oppo also uses a different battery structure in each of its phones. VOOC-enabled phones consist of several individual battery cells, and the high 5A current is split among those. Due to this, the battery has a higher number of contacts than usual, with each cell charged simultaneously. Most of Oppo's latest smartphones are VOOC compatible, including the Oppo N3, R5 and Mirror 3. All VOOC-enabled Oppo phones come with a compatible charger in the box.



DEMOCRATIZING SSD STORAGE

SSDs have never been more affordable and here are the factors that have been helping drive prices down.

by *Kenny Yeo*

As little as three years ago, a high-end 256GB SSD can set you back as much as RM1,250. Today, a typical high-end SSD of the same capacity costs less than half that amount. It's amazing how much prices of SSDs have fallen. Of course, one of the reasons for that is because of volume production. Economies of scale mean that prices fall as production ramps up. But beyond this, there are also other factors at play including more efficient manufacturing processes and increased competition in the form of third-party controllers.

When talking about more efficient manufacturing process, what we are really saying is that each wafer now gives us more NAND dies. This is achieved by shrinking the manufacturing process so that the NAND dies get smaller. At the present, we are looking at sub-20nm manufacturing processes. Toshiba's latest MLC NAND is currently being produced using a 15nm manufacturing process, while Micron recently announced that it will begin production using a 16nm manufacturing process.

Unfortunately, we are fast approaching the limits of what can be achieved with shrinking manufacturing processes. To put it plainly, reducing the manufacturing process means squeezing more cells onto the die, which in turn means there is less space between each cell. And since each cell has to hold a charge, the interference from neighboring cells can sometimes disrupt or even inadvertently change the state of the cell that is next to it and cause the data to become corrupt. What this ultimately means is that there is a limit to how close cells can be put next to each other.

NAND manufacturers overcome this problem by increasing the amount of data that can be stored in a single cell. Imagine that you have 10 baskets and instead of holding a single ball each, they can now accommodate two balls each. You effectively double your storage. The idea applies to NAND memory too, though not quite so literally.

Early NAND flash was known as SLC NAND (single-level cell) as each cell held only a single bit of data. MLC NAND, which is the most commonly used type of NAND in consumer SSDs, typically refers to NAND chips with cells that hold two bits of data. Now, more SSD manufacturers are turning to TLC NAND (triple-Level cell), which stores up to three bits of data.

The next breakthrough in NAND technology is 3D Vertical NAND, but this technology is still very much in its infancy even though early products employing 3D Vertical NAND have been promising. As a result, TLC NAND will be, for the foreseeable future at least, the champion for driving prices of consumer SSDs down.

To be sure, TLC NAND is not a recent development. USB flash drives, as early as 2008, have employed the use of TLC NAND. However, endurance of these early NAND was poor and could not withstand the rigors of being used as a system drive. It is only recently in 2013 that Samsung put out the first consumer TLC NAND SSD - the SSD 840 EVO. And they were able to do so because of two things. The first is, of course, endurance of the dies itself are much better. Secondly, controller and firmware technology have both matured to the point where they could offer compelling enough performance and endurance.

In those early days, only Samsung had access to a controller capable of accommodating TLC NAND. One must realize that adding controller support for TLC NAND is much more complicated than just accommodating that extra bit of data per cell. The ECC engine (Error-correcting code) needs to be far more robust to deal with the more frequent and severe errors that TLC NAND drives would face. And Samsung was able to do so because it is one of the few SSD manufacturers that manufacture its own NAND, develops its own controller and firmware.

Fortunately, the controller landscape has changed significantly. SanDisk and OCZ have both TLC NAND SSDs in the market. But more importantly, JMicron, Silicon Motion and Phison, have all announced new controllers in the past year that will offer support for TLC NAND and even 3D Vertical NAND. What this means is that smaller SSD manufacturers without the resources to develop their own controllers and firmware will now be able to source for controllers that can accommodate TLC NAND, allowing them to offer their own TLC NAND SSDs.

Obviously, such an arrangement does not promote much differentiation in terms of performance, but the increased competition is good for consumer as it can only drive prices down, especially in a market as price sensitive as SSDs. Without their own NAND production facilities, controller or firmware, these brands are really competing on price and whatever additional perks they can throw in, such as extended warranties or accessories. These will ultimately benefit consumers.

In summary, consumers can expect TLC NAND to be the driving force behind declining SSD prices. On top of that, the proliferation of TLC NAND SSDs will be aided by the greater availability of third-party controller offering support for such NAND memory. Here's to more affordable SSDs!

For a very generic explanation - think of the different types of NAND as glasses of water. For SLC NAND, there are only two voltage states, so it's easy to tell whether the level of water inside amounts to a "0" or "1". TLC NAND has eight voltages stages, allowing it to pack more data in the same space. However, it gets hard to tell at a glance where the water level is up to, which is why the trade-off is poorer performance. With better measuring and control techniques, this is minimized.

CONTROLLER TRIUMVIRATE

PHISON PS3110-S10
A quad-core controller that is designed for use in high-end enthusiast-class SSDs. It has an eight-channel design and claims to enable sequential read and write speeds of 550MB/s and 530MB/s respectively for SSDs using MLC NAND. Random read and write performance is claimed to be in the region of 100,000 and 90,000 IOPs respectively. Such performance figures are comparable to the latest high-end SSDs in the market today. The Phison PS3110-S10 will also offer hardware AES encryption.

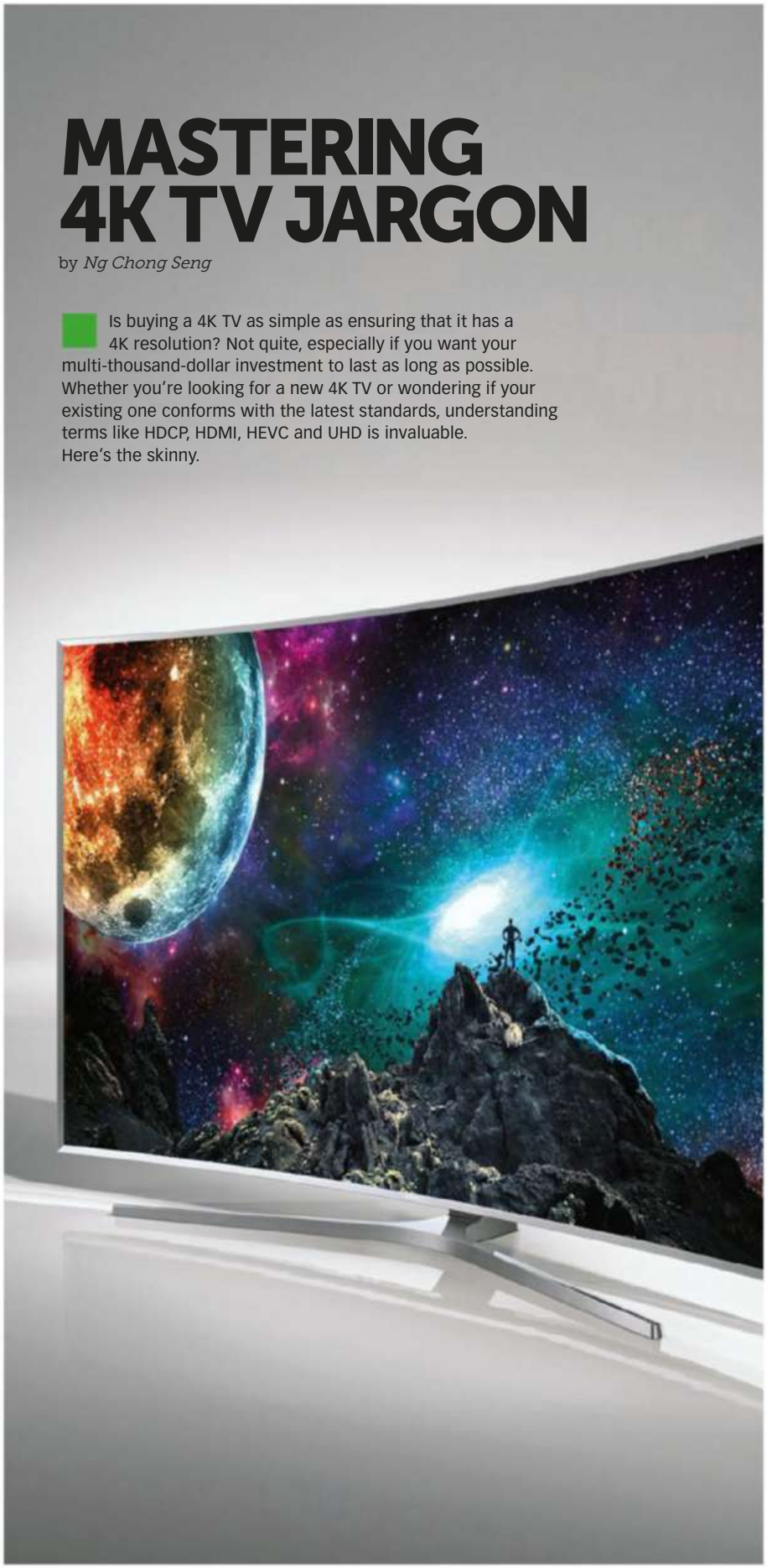
SILICON MOTION SM2256
The latest controller from Silicon Motion is an improvement over the existing SM2246EN controller already used in some drives today. The SM2256 adds support for TLC NAND and features Silicon Motion's NANDXtend error-correcting code technology that claims to be able to improve the endurance of TLC NAND. It can also be extended to accommodate 3D Vertical NAND in future. Like most modern controllers, AES encryption comes as standard and the controller claims to be able to offer sequential read and write speeds of up to 540MB/s and 480MB/s respectively, meaning it is comparable with today's mainstream SSDs.

JMICRON JMF680
The JMicron JMF680 is an update to the current JMF670H controller and differs by offering support for TLC NAND, made possible by its improved error-correcting code engine. The JMF680 will also feature Write Booster, JMicron's own SLC cache technology that boost performance when paired with TLC NAND, which typically suffers from poor write performance. The JMF680 features a four-channel design and is targeted at mainstream users. Like the Silicon Motion SM2256, the JMicron JMF680 was designed to be extensible, so it will also be able support 3D Vertical NAND in future.

MASTERING 4K TV JARGON

by *Ng Chong Seng*

Is buying a 4K TV as simple as ensuring that it has a 4K resolution? Not quite, especially if you want your multi-thousand-dollar investment to last as long as possible. Whether you're looking for a new 4K TV or wondering if your existing one conforms with the latest standards, understanding terms like HDCP, HDMI, HEVC and UHD is invaluable. Here's the skinny.



HDCP 2.2

Most 4K TVs support something called HDCP, which stands for High-Bandwidth Digital Content Protection, but only the more recent ones come with HDCP 2.2, the latest generation content protection mechanism. Simply put, HDCP attempts to secure the connection between the source and display (and anything in between); and expectedly, the protection system is the strongest yet in version 2.2.

Now, HDCP 2.2 is really designed for 4K content, so you're fine if you think you're going to stick with 1080p all the way. But there will be a problem if you've a 4K source device (e.g., a Blu-ray player) or service that's HDCP 2.2-compliant and is trying to send protected 4K signals to a non-HDCP-2.2 4K TV. The TV would most likely show a blank screen. To make matters worse, non-HDCP-2.2 devices can't simply be upgraded to support HDCP 2.2, because specific hardware is required.

In short, if you're buying a new 4K TV (or home theater projector or receiver) today, it's of your best interest to make sure that it supports HDCP 2.2. Many consumers like to buy from second or third-tier brands because they're usually more affordable; and while there's nothing wrong with that, be mindful that such TVs often lack the latest features like HDCP 2.2.

For early adopters who've bought a non-HDCP-2.2 4K TV, unfortunately, there's nothing you can do. But now that you know what it is, don't be too surprised if some 4K content won't display properly on your TV some point down the road.

Because HDCP 2.2 is very new and often used as a selling point, manufacturers would usually indicate which connections on their devices support it.

HDMI 2.0

Early and cheap 4K TVs typically come with HDMI 1.4, and while it supports 4K just fine, it has a framerate limit. To be more precise: 30 frames per second for 3,840 x 2,160 and 24fps for 4,096 x 2,160.

HDMI 2.0 is designed to support higher bandwidth (up to 18Gbps) than 1.4, and as a result, it's able to do 4K at framerates up to 60 fps. Other features include options for the Rec. 2020 color space, 4:2:0 chroma sub-sampling, up to 32 channels of audio, 21:9 aspect ratio, dual video streams, and improved 3D and CEC functions. HDMI 2.0 is also backwards compatible with HDMI 1.x.

In a nutshell, HDMI 2.0 can only get more important as more 2160/60p content arrives. For futureproofing's sake, there's no reason to omit it if you're buying a 4K TV (or receiver) today. Some early 4K TVs are able to upgrade from HDMI 1.4 to 2.0 through a firmware update, but that is not a guarantee and really depends on the manufacturer.

Also, while HDMI 2.0 and HDCP are often mentioned in the same breath, know that one doesn't equate the other. Although it's possible to upgrade from HDMI 1.4 to 2.0 through a software update, the same doesn't apply for HDCP 2.2 (see above). In addition, if a 4K TV supports HDMI 2.0, it doesn't mean it also supports HDCP 2.2.

For those interested, the latest HDMI version now stands at 2.0a, with high dynamic range (HDR) video support being the major new feature added.

While HDMI 2.0 is a real standard, don't get cheated to buy an expensive HDMI 2.0 cable, because there's no such thing. A regular High Speed HDMI cable is all you need.

PICTURES **YAMAHA, AMAZON, NETFLIX** ILLUSTRATION **IANCHONG**

HEVC

HEVC/H.265, or High Efficiency Video Coding, is a compression standard that succeeds the MPEG-4/H.264 AVC standard. Expectedly, it's much more efficient (almost 200 percent) than its predecessor, which becomes important when dealing with high-res, high-bandwidth 4K content. As such, HEVC has become the go-to compression scheme for 4K streaming services, like those from Netflix, Amazon, and M-Go.

The good news is unlike 4K TVs sold in 2013 and early 2014, recent 4K TVs from name-brand makers mostly come with a built-in HEVC decoder, so they shouldn't encounter any hiccups when playing HEVC-compressed 4K streams. That said, it's still possible for a HEVC decoder-equipped 4K TV to not playback HEVC 4K content, something we saw on the 2014 Panasonic AX800/802 series. In this particular case (which was resolved in October 2014 through a firmware update), they weren't able to play Netflix's 4K content because the TVs' processing chip didn't meet Netflix's certification requirements.

At the moment, we aren't aware of any HEVC problems in any of the latest 4K TVs made by name-brand TV manufacturers. If anything, check if HEVC is supported if you're buying a model in their lower-end series. Again, be more careful with off-brand 4K sets, because their makers are less likely to be as enthusiastic with regards to such certification.

For those who have bought a 4K TV in 2013, you could be out of luck, unless you've one of LG's earliest 4K TVs that came with a built-in HEVC decoder, or a Samsung 4K TV, like the S9 and F9000. The latter didn't come with HEVC support, but it can be added easily via Samsung's external One Connect upgrade box.

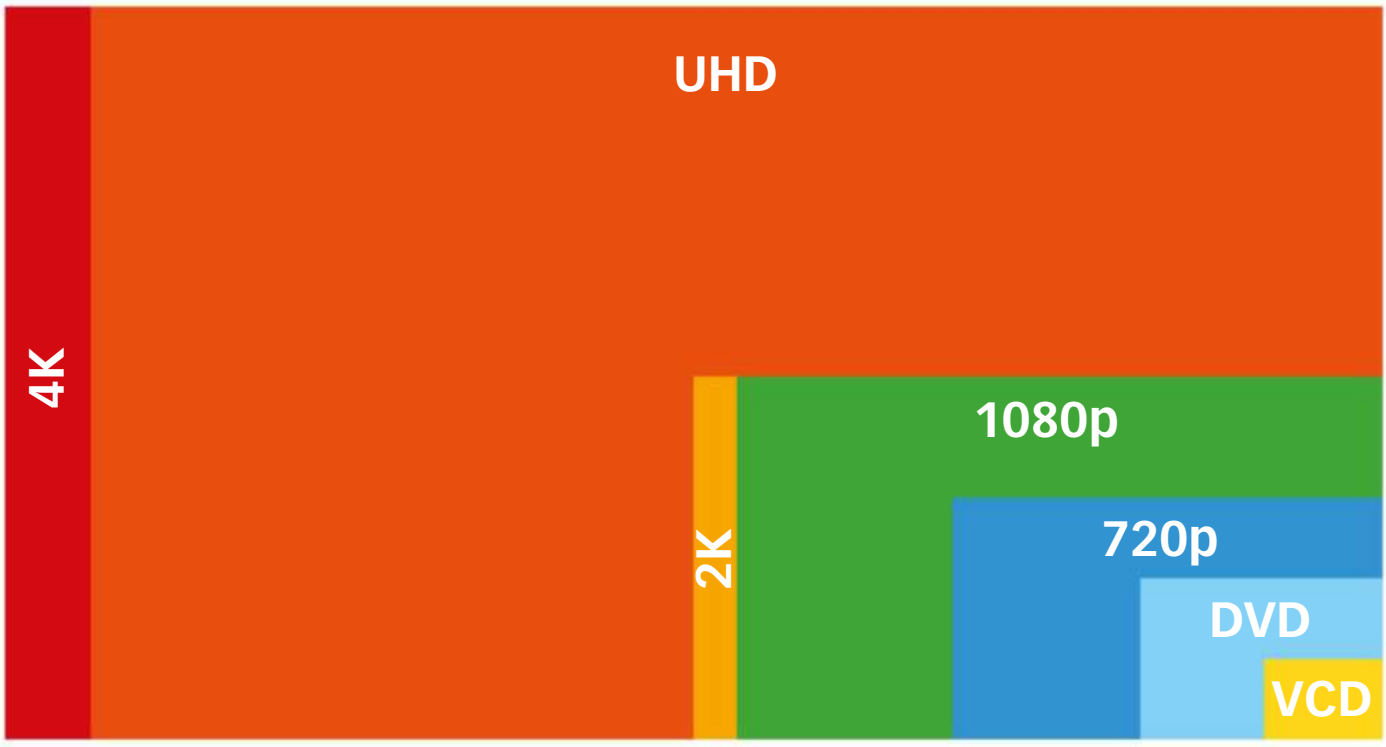
4K streaming services such as Netflix tend to use HEVC, so your TV needs to have an HEVC decoder to show the content properly.

UHD

Strictly speaking, a 4K TV that has a resolution of 3,840 x 2,160 pixels (or 2,160p) should really be called a UHD (Ultra-High Definition) TV or 4K UHD TV to avoid confusion with the DCI (Digital Cinema Initiatives) standards, the latter of which are specs defined for digital cinema production and projection systems.

Standards and trade bodies like the Consumer Electronics Association (CEA) in the U.S. and Digital Europe in Europe have also gotten into the act of defining 4K for consumer products and coming out with their own standardization logos. Both organizations agree that 4K UHD has a pixel count of 3,840 (horizontally) and 2,160 (vertically), and there must be 8 million addressable pixels (3,840 x 2,160) that use an red-green-blue (RGB) sub-pixel layout. Which brings us to the brouhaha that started last year with regards to whether a 4K panel using a red-green-blue-white (RGBW) sub-pixel arrangement can be considered a true 4K UHD TV. Commonly found in China, these cheaper RGBW-based LED-LCD 4K TVs use a fourth white sub-pixel, which results in lower energy consumption without sacrificing brightness. However, due to the pixel arrangement and the fact that each pixel isn't made up of three colored sub-pixels, image quality may take hit as their resolution and color accuracy aren't as good as 'true' 4K panels using a RGB matrix.

At the end of the day, it boils down to the question of whether you can see the difference. The danger is more with 4K TVs using RGBW panels sourced from unknown suppliers, because for these panels, you'd never know the ratio between the RGB and white sub-pixels. This is yet another reason why we always recommend buying from reputable TV makers.



The TVs that we colloquially call '4K TVs' should really be called 'UHD TVs' or '4K UHD TVs' to avoid confusion with DCI 4K standards.

BE SAFE WITH TREND MICRO MAXIMUM SECURITY 10

by *Azizul Rahman Ismail*

Today, security is not an option, and vigilance is necessary to ensure that you and your data stay safe. The launch of Windows 10 comes with new features, refreshed UI, improvements, along with new and unknown threats. In response, Trend Micro released Maximum Security 10.

1) GET IT FAST AND GET IT NOW

So, you've just upgraded your PC to Windows 10 and you want your system to be better protected. You don't have to go to the store to get the best, just head on over to the Trend Micro website, select For Home, and click on Maximum Security 10. From there, you can either purchase a full version of Maximum Security 10, or try it out for 30 days. No credit card required.

Click Free Trial to download the Trend Micro MAX 10.0 downloader. The downloader ensures that your installation process is smooth, and can be resumed if interrupted.

2) DOWNLOAD AND INSTALL

The downloader also ensures that you'll have the latest version of Trend Micro Maximum Security 10, including the latest patches and updates. This is extremely important because a security software that is not up to date, even during installation, could be compromised.

Before installation, Trend Micro Maximum Security 10 will perform a system check to ensure that your system is not only compatible, but safe. This is done because a compromised system must first be treated to ensure the effectiveness of the security software.

3) ONE-BUTTON PROTECTION

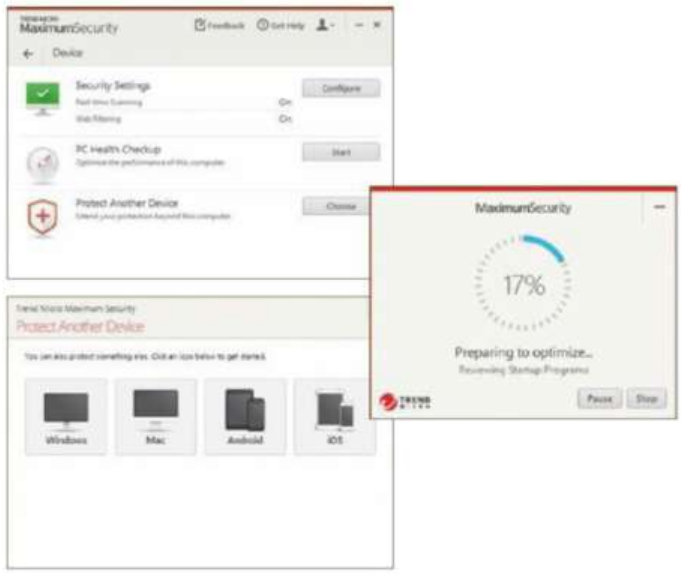
Once installation is done, you will be welcomed by the Trend Micro Maximum Security 10 dashboard. Its clean, straightforward and simple design makes securing your PC as easy as clicking a button. In fact, just click the Scan button and Maximum Security 10 will not only scan your PC for any threats, but also optimize your PC. It's that simple.

But, Maximum Security 10 can do a whole lot more. It has several passive protection features, but we are going to look at four active features that you can customize and control.

4) DEVICES

There are three main options here: Security Settings is where you can fine-tune Maximum Security 10, PC Health Checkup optimizes your system without doing a threat scan, and Protect Another Device lets you install Maximum Security 10 on other systems, including Android and iOS devices, which is fast becoming a necessity.

Security Settings is a powerful tool. Here, you can set the security sensitivity level and schedule scans. However, if you do not know what any of the settings here does, we suggest that you leave it at default as the wrong settings could lower your level of protection.



5) PRIVACY

The Privacy option takes you to a page where you can configure the Privacy Scanner, Social Networking Protection, and Data Theft.

Privacy Scanner detects your social network privacy settings and recommends the best options. This is especially useful if you want to stay private and work with Facebook, Twitter, and Google+.

Social Networking Protection tells you the security of links on social networks, while Data Theft Prevention ensures that your sensitive information do not get transmitted on to the Internet unprotected.

You will need to enable Trend Micro's plug-ins in your favorite web browsers for these security measures to function properly.

6) DATA

If you want to ensure that your deleted files stays deleted your important files are encrypted, your passwords are managed, and your cloud storage is secure, the tools are here in the Data tab.

Secure Erase can be configured to bypass the Recycling Bin, but re-write data on the last known location of the file to ensure that it cannot be recovered, while the Vault not only encrypt and password-protect your files, but also lock down your computer remotely, in case of theft.

There's also the Password Manager, and the Cloud Storage Scanner, which is a brand new feature that lets you secure your files on the OneDrive cloud storage service.

7) FAMILY AND PASSIVE PROTECTION

Finally, there is the Family Protection feature. It not only works as a web filter, by limiting kid's access to inappropriate websites, but also helps manage their Internet usage in general.

Trend Micro Maximum Security 10 also has several other features that are passive, such as system performance optimization, but the most important feature of all is the protection from ransomware, which is fast becoming a major threat for the everyday populous.

MUSIC
JOOX-BOX

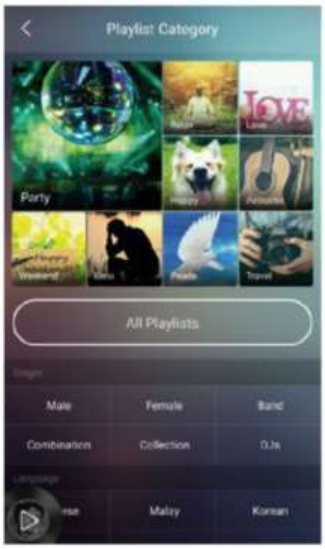
by *Peter Chu*

If you're a staunch advocate of music streaming services, you probably should already be familiar with how they are mostly identical to each other in respect to the features and content that they offer. And that's where JOOX comes in – a music streaming service that seeks to differentiate itself from the rest of the pack by offering its users with personalized, specially-curated music content.

Boot up the JOOX app on your smartphone and you'll be greeted by its 'Discover' landing page, where you'll find new releases, JOOX's chart-topping tracks, featured artists, and the Editor's Pick – all of which are updated on a regular basis.

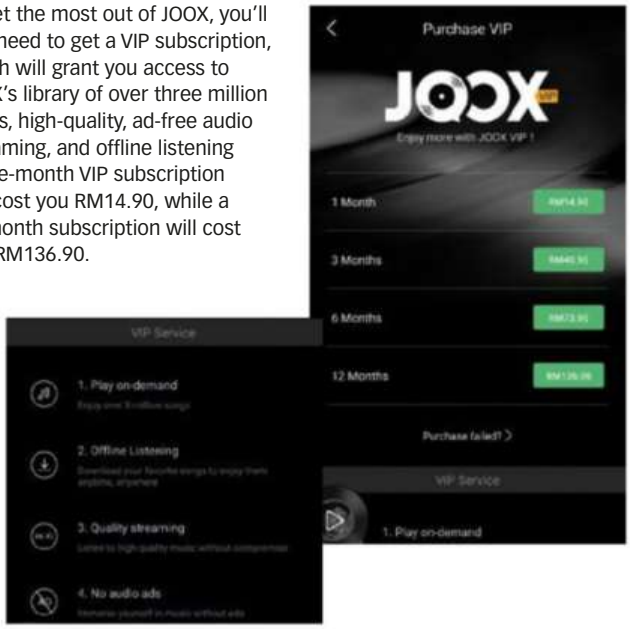
If you're feeling a little down in the dumps and need a little mood booster to help lift your spirits back up, head on over to JOOX's comprehensive playlist section, where you'll be able to find a collection of music tracks that have been neatly categorized into playlists that are based on moods (happy, angry, emo), genres (classical, acoustic, rock), and themes (motivation, party, celebrations).

The best part? All of JOOX's recommended playlists are carefully hand-picked by a team of Malaysian music curators to ensure that they would suit the music palate of Malaysian JOOX users.



One of JOOX's noteworthy features is the fact that its user interface and content will change accordingly, based on the language of the app. For example, if the language has been set to Chinese, all the songs recommended to you will be of that language, and vice versa if you select the Malay or English language.

To get the most out of JOOX, you'll first need to get a VIP subscription, which will grant you access to JOOX's library of over three million songs, high-quality, ad-free audio streaming, and offline listening A one-month VIP subscription will cost you RM14.90, while a 12-month subscription will cost you RM136.90.



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Floppy disks were the primary data storage from the 1970s till 2000s. The larger 5.25-inch disks held only 1.2MB of data each, while the smaller 3.5-inch disks, between 720KB to 2.88MB.

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PLAZA LOW YAT

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